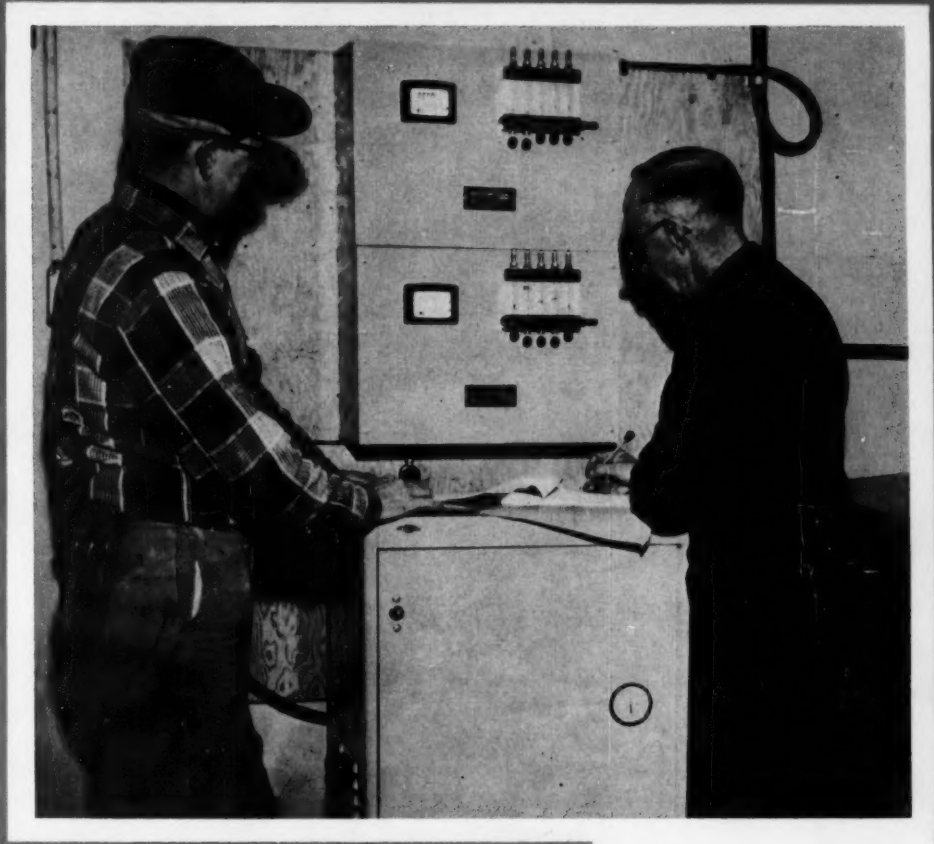
APRIL 25, 1959
VOL. 156 — NO. 17

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

SINCE 1901



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Guaranteed Circulation This Issue
15,304 of Which 12,487 is Paid

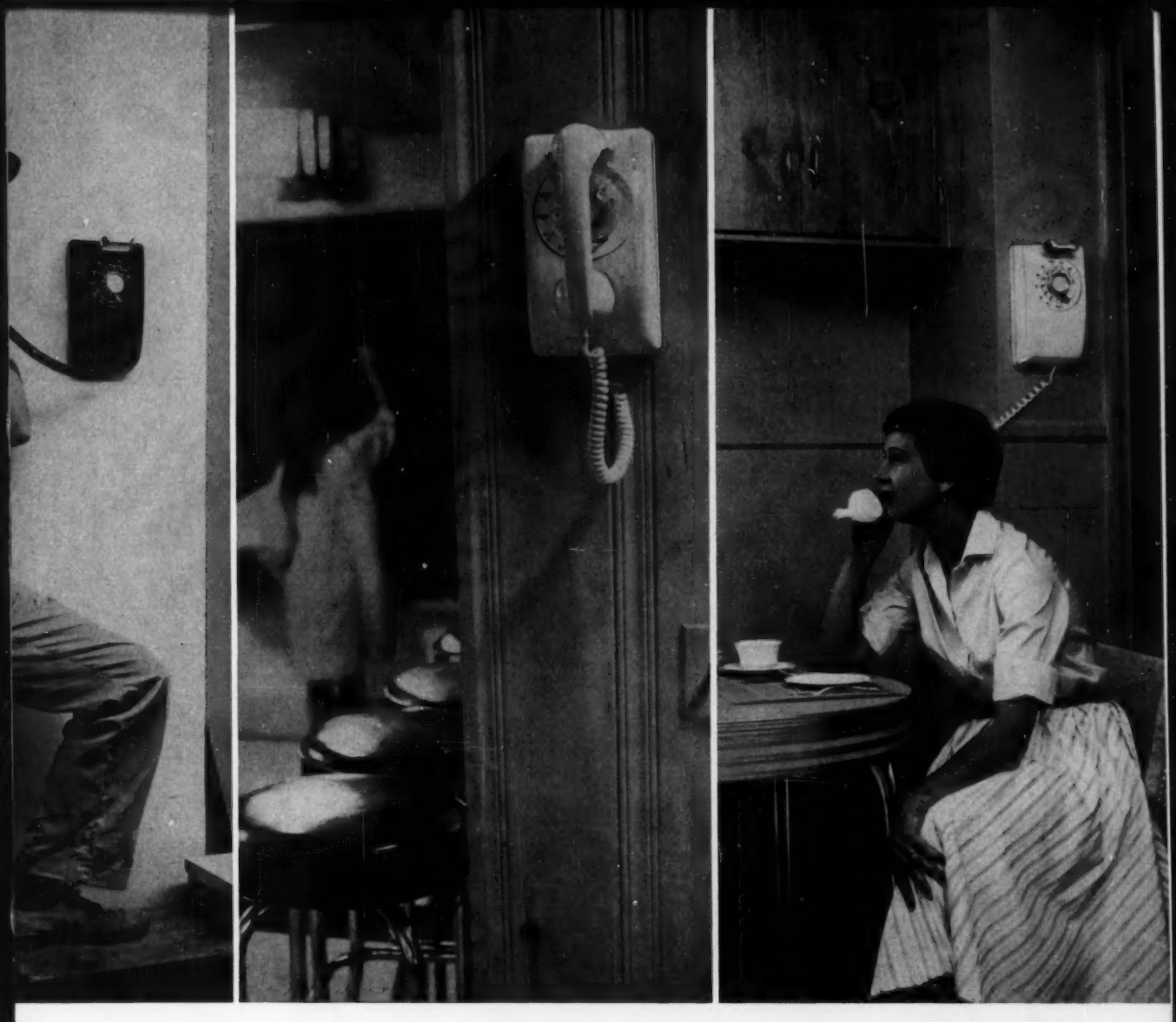
SPRING CONSTRUCTION—RURAL ISSUE

CABLE PRESSURIZATION

General Telephone Co. of Pa. applies techniques of rapid pressurization to exchange cable in Franklin, Pa., by using continuous feed pressure system with packaged meter panel. Here H. C. Hollingsworth (left) and O. K. Hites take panel readings. See p. 52.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

New plan for extra revenue!



Upstairs . . . downstairs . . . all around the town—there's a fast-growing market for extension telephones *in color.*

You can earn extra revenue by installing extension phones—*less ringer*—and reap the benefit of our low-cost 1553-W Wall Telephone *plus* high monthly return on your investment!

Our new wall instrument fits anywhere: in any number of convenient places for commercial subscribers . . . in kitchen, hallway, workroom, den, for home users. It's the ideal extension for modern homes—perfect as a "first phone" too.

Wherever you mount the 1553-W, its clean, modern design adds sparkling beauty. A high-efficiency "500-type" telephone, this instrument is available in ten decorator colors, including black or white.

Ask your Stromberg-Carlson representative to explain our new extra-revenue plan in detail.

It works!

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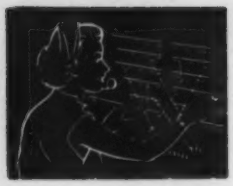

FLASHES AND PLUGS

NO TICKLING MATTER. Several years ago when telephone paging service was still in the awkward stage of testing various mechanisms, efforts were made to enlist the interest and co-operation of various medical and health authorities.

The story is told about the experience of one company representative who interviewed the superintendent and head nurse of a rather large city hospital. This superintendent, incidentally, was an elderly nun—the Mother Superior, in fact.

The company man was trying to describe the advantages of a device whereby the hospital could call staff doctors back to emergency cases even when they were at a football game.

The doctor would be alerted through a little radio device carried in his pocket which would signal his code. Then the doctor would go to the nearest telephone and call the hospital.

"But why can't you fix it so that I could talk to the doctor right then and there, over this same instrument?" the Mother Superior asked.

The company man had to admit that the particular device did not provide direct two-way conversation.

"Then, what does it do?" the nun asked.

"Well, it just sort of buzzes or tickles him."

"Young man," the Mother Superior said sternly, "when I want a doctor in this hospital on an emergency, I want to *talk* to him. I don't want to tickle him!"

•

SURVEY COURSE. An engineering school bulletin contains the following passage:

"Our four-year course in engineering can be easily completed in six years if the student faithfully attends night school and goes to summer school for three quarters."

•

THAT TELEPHONIC URGE. A businessman telephoned his wife one morning and asked how everything was going.

"This darned telephone!" she exclaimed. "I don't seem to be able to get a thing done."

He sympathized, and apologized for another interruption.

"It's not people telephoning," she said. "It's just that every time I start working, I think of somebody else *I* have to call."

•

STANDARD DEDUCTION. The modern child—upon hearing the story of Cinderella for the first time—queried: "When the pumpkin turns into a golden coach, is that regarded as straight income or capital gain?"

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

April 25, 1959

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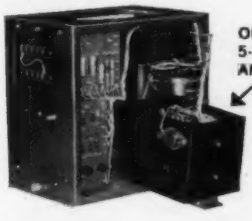
FIVE IDENTICAL PLUG-IN GENERATOR UNITS

Five interchangeable frequency generators—each complete with voltage regulator, oscillator, transformers, amplifiers, cut-off circuit. Each individually adjustable for both frequency and voltage. Frequencies stabilized against changes in input voltage, temperature, load.

Transistor circuits for long trouble-free life. No moving parts. No routine maintenance. Operates from 50-volt battery at extremely low drain.

COMMON EQUIPMENT UNIT



Contains, for all frequencies: ample battery filter, remote control relay, audible ringing tone generator with (optional) 5-watt tone amplifier.

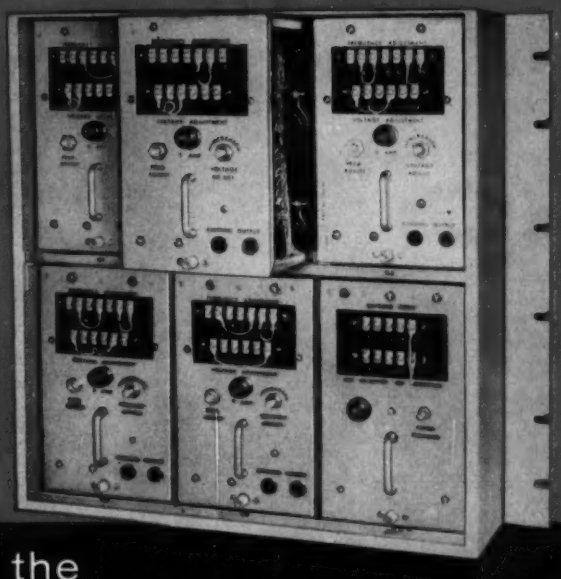
AUTOMATIC TRANSFER PANEL

Connects two ringing machines together with either as the main machine, the other as standby. Load is automatically transferred to the standby and alarm is operated on partial or complete failure of the main. Manual transfer possible to check the standby. Either machine supplies load while other is metered for adjustment or tested with simulated ringing failure. Other panels available: portable, manual transfer and supervisory.

TWO MODELS
(Conservative ratings)
Model T: output 25 watts per frequency.
Fits 19″ rack, adapts to 23″ and 30″.
Takes only 17½″ vertical rack space.
Model T50: output 50 watts per frequency.

Write for Bulletin 177A

NEW!



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ideal ringing machine...
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★ **ADJUSTS TO ANY FIVE FREQUENCIES**
from 13 to 66-2/3 cycles. Screwdriver adjusts any generator unit to new setting in as little as two minutes.

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when ringing into a short circuit.

★ **SINE-WAVE OUTPUT**
...the ideal ringing power.

★ **AUDIBLE RINGING TONE**
Separate generator for 420/40 cycles.

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Better in all ways...

BETTER TO LOOK AT! Choice of 15 attractive colors to match all decors, whether for home, school or business: red, yellow, green, blue, beige, grey, ivory, turquoise, rose pink, aqua blue, light beige, light grey, white, brown, black. Available in standard desk or the new, popular wall models.

BETTER TO LISTEN TO! Surpasses all previous instrument performances! Completely engineered to set a new standard of excellence for independent telephony. Varistors provide proper level of voice transmission; incorporate acoustic peak suppression.

BETTER TO TALK OVER! Speech quality is improved too: the shorter handset design extends the frequency bandwidth, sets a new high in transmitting and receiving performance. The transmitter is closer to user's mouth, gives a better signal-to-noise ratio.

the Kellogg K-500

BETTER INSIDE! Designed for top performance, using highest quality components throughout. Receiver, transmitter, ringer are new in principle, design and performance; the network is a compact, sealed housing. The single-lobed dial cam provides more uniform pulses; the new number plate makes for faster, surer dialing.

Kellogg's K-500 series is your best answer to assure subscriber satisfaction and long, reliable service. Ask your local Kellogg representative to explain the new monthly shipment plan for K-500s: it guarantees you a steady supply of these wanted telephones —at lowest unit cost.

KELLOGG
CHICAGO, ILLINOIS
Communications Division of ITT

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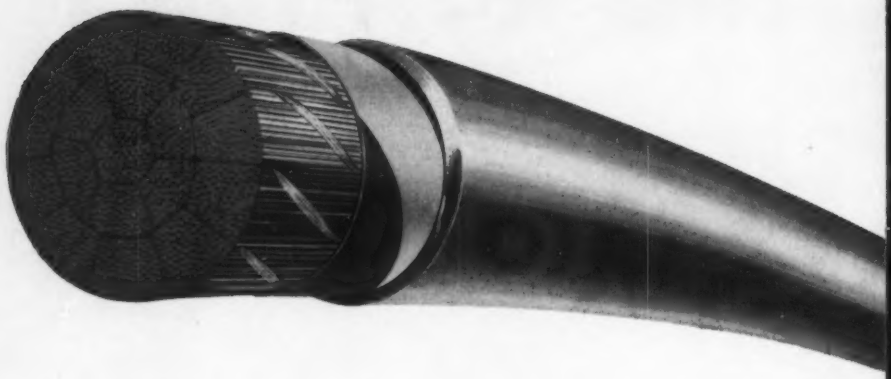

PHELPS DODGE TELEPHONE WIRE AND THE "MINE-TO-MARKET" QUALITY

Paper-Insulated Lead-Sheathed Telephone Cable

CABLE LINE!

This Phelps Dodge telephone cable combines the superior transmission characteristics of paper insulation with the durability and moisture resistance of lead. It is backed by Phelps Dodge's extensive research and manufacturing experience in the paper-lead cable field.

The controlled craftsmanship and quality of this paper-lead cable are typical of the entire line of Phelps Dodge telephone wires and cables, including:

- Exchange Area Telephone Cable
- Self-Supporting Telephone Cable
- Rural and Urban Distribution Telephone Wire
- Interior Telephone Cable
- Rubber-Insulated Lead-Sheathed Telephone Cable
- PD—Tel Wire

PHELPS DODGE COPPER PRODUCTS

CORPORATION

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DOW | **HERBICIDES**

NOW—trained Dow field men

The man in the business suit is a transmission engineer who had a hunch he wasn't getting his money's worth from chemical vegetation control. He called his Dow field service man to take a close look.

On-the-spot inspection was just in time. What had looked like a thorough vegetation control job last fall was showing shortcomings with the full flush of growth. The wrong choice of material had failed to finish off a troublesome stand of oak. Stumps not properly treated were beginning to re-sprout. Places that should have needed only a touch-up spraying this year now needed a full treatment *—with the right formulation.*

When he finished his examination, the specialist from Dow had plenty of profitable advice to offer. He showed which application method to use . . . prescribed the correct dosage and timing for application of Veon*, Esteron*, 245 O.S., and Kuron*. The result: this utility will save real money from this season on . . . and get better vegetation control than ever before.

Right now is the time to re-evaluate your vegetation control program. A trained field service man will gladly accompany you or your spraying contractor on an inspection trip. A quick way to invite him is to clip the coupon at the right.

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help you plan and save

. . . with Dow Brush and Weed Killers

THE DOW CHEMICAL COMPANY
AGRICULTURAL CHEMICAL SALES DEPT. 203FD4-25
MIDLAND, MICHIGAN

I'd like a summer check-up of my vegetation control program.

☐ Please have a vegetation control expert call.

☐ Send me free booklet on Vegetation Control for Utilities.

Name_____

Title_____

Firm_____

Address_____

City_____ Zone____ State_____

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

When a housing development blooms overnight, the cost of providing telephone service has, up to now, been staggering. Leich's Line Concentrator, a miniature extension of the central office switchboard, solves this problem. It lets you add telephones in such an area without installing all the additional lines from the central office.

Here's an example. If a housing development has 100 new subscribers, it ordinarily takes 25 lines to furnish them with 4-party service. But with Leich's 9 trunk Line Concentrator you need install only 11 lines to give them equivalent service. Your outside plant construction costs are cut by more than half.

What's more, the subscribers can make calls within and outside their area as easily and quickly as with directly connected central office lines. Ringing and service facilities are identical to regular central office lines.

The installation consists of two units—a central office unit and a remote subscriber unit. No power is required at the remote subscriber unit. No changes are necessary in the central office switchboard.

Two basic sizes of the Leich Line Concentrator will be available. The first, the 49-9-2A, is equipped with 49 lines, 9 traffic trunks, and 2 control trunks. The second, the 49-18-3A, is equipped with 49 lines, 18 traffic trunks, and 3 control trunks.

Contact Leich for more details.

MORE FACTS ABOUT LEICH'S LINE CONCENTRATOR

- Can be used with any 48 volt common battery manual or dial system which accepts loop seizure and places ground on the sleeve conductor associated with a line upon seizure and while busy.
- Subscriber unit can be installed in a small steel building, or mounted on a pole in a weatherproof steel cabinet. These are available when required.
- Permits upgrading service without additional outside plant investment.
- Eliminates the need for low usage subscriber lines between an area and the central office.
- Switches identified calls to answering services.
- Allows you to concentrate extended area service trunks (EAS) to a single route into a CDO dialing area.
- Allows emergency expansion of service, such as in a new housing development, or short-term coverage to a special event.

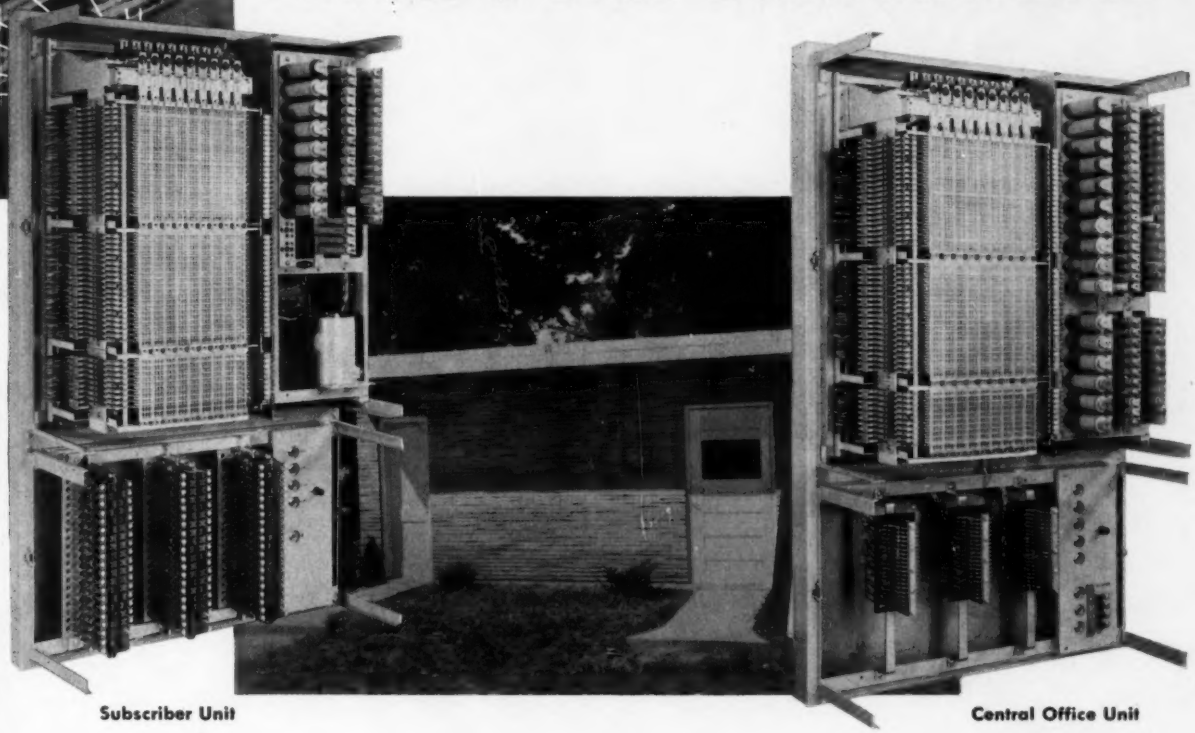
LEICH

Subsidiary of GENERAL TELEPHONE & ELECTRONICS

Areas *without additional lines from the central office!*

LEICH LINE CONCENTRATOR

with **LEICH'S Line Concentrator**



Subscriber Unit

Central Office Unit

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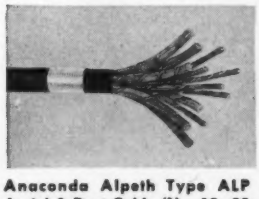
manufacturers of telephones, switchboards and related apparatus since 1907

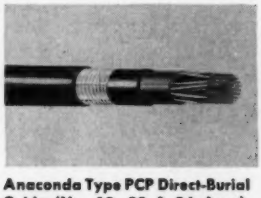
Call on Anaconda for all your telephone cable needs!

Here's the full line designed by the independent telephone manufacturer to the independent telephone industry

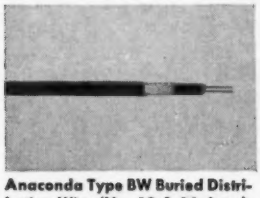
PLASTIC-INSULATED CABLES



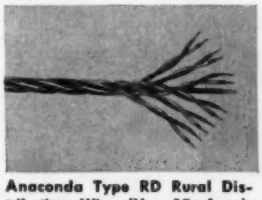
Anaconda Alpeth Type ALP Aerial & Duct Cable (No. 19, 22 & 24 Awg). Polyethylene insulated; full color code; 8-mil longitudinal aluminum shield; high-molecular weight polyethylene jacket.



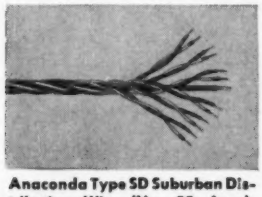
Anaconda Type PCP Direct-Burial Cable (No. 19, 22 & 24 Awg). Polyethylene insulated; full color code; polyethylene belt; 5-mil longitudinal copper shield; polyethylene jacket.



Anaconda Type BW Buried Distribution Wire (No. 19 & 16 Awg). Two conductors, parallel; insulated with polyethylene; oval in shape; flat-steel wire serving, asphalt coating, Densheath® jacket.

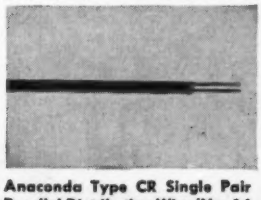


Anaconda Type RD Rural Distribution Wire (No. 19 Awg). Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.

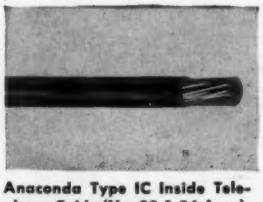


Anaconda Type SD Suburban Distribution Wire (No. 22 Awg). Conductors insulated with polyethylene, jacketed with color-coded Densheath; pairs assembled around polyethylene-covered support wire.

Anaconda Type UD Urban Distribution Wire (No. 24 Awg). Densheath-insulated conductors; color-coded pairs assembled around polyethylene-covered support wire.



Anaconda Type CR Single Pair Parallel Distribution Wire (No. 14 Awg & .080" Copperweld). Two conductors parallel; insulated with high-molecular weight polyethylene, oval in shape.

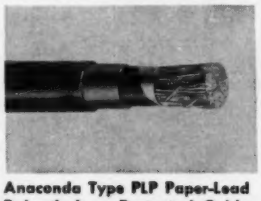


Anaconda Type IC Inside Telephone Cable (No. 22 & 24 Awg). Densheath-insulated inside telephone cable; nonfading color-coded pairs with corrosion-resistant Densheath jacket overall.

PAPER-INSULATED CABLES

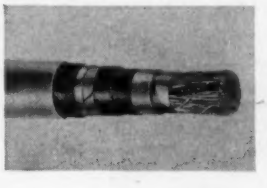
Anaconda Type STAL Paper-Insulated, Stalpeth-sheathed Cable (No. 19, 22, 24 & 26 Awg). Paper insulated; aluminum & coated-steel tapes longitudinally applied; polyethylene jacket.

Anaconda Type PL Paper-Lead Cable (No. 19, 22, 24 & 26 Awg). Single-paper-tape insulated telephone cable, paper core covering over assembled pairs; antimony-lead sheath overall.



Anaconda Type PLP Paper-Lead Polyethylene Protected Cable (No. 19, 22, 24 & 26 Awg). Paper insulated, paper core covering, assembled pairs; antimony-lead sheath, polyethylene jacket.

Anaconda Type PLJ Paper-Lead, Jute-Protected Cable (No. 19, 22, 24 & 26 Awg). Single-paper-tape insulated, paper core covering over assembled pairs; antimony-lead sheath; jute serving overall.



Anaconda Type PLBT Paper-Lead, Tape-Armored Cable (No. 19, 22, 24 & 26 Awg). Paper insulated; antimony-lead sheath; impregnated-paper tape; jute; flat-steel tapes; nonadhesive coating.

For all your telephone needs, call the Man from Anaconda. He will be happy to provide you with further information. Write for Bulletin #DM-5833 on Anaconda-Alpeth and/or #DM-5771 on Anaconda Stalpeth and Paper-lead cables. Anaconda Wire & Cable Co., 25 Broadway, New York 4, New York.

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TALK BETTER LAST LONGER

with low-cost

Copperweld® O-Eighty-Thirty

TELEPHONE LINE WIRE

The superior voice transmission of O-Eighty-Thirty Telephone Line Wire makes friends and builds good will every time a subscriber picks up his phone. And this low-cost line wire continues to provide the same excellent talking qualities even after many years of service. There's no building-up of noise level and weakening of signals due to rust, because O-Eighty-Thirty is completely non-rusting.

You save money, too. The initial cost is practically the same as ordinary wire. And its extra high strength permits economical long-span construction on both voice and carrier circuits. O-Eighty-Thirty is easy to install, due to its light weight—which also saves on shipping and handling costs.

In short, you can provide high-grade service at low cost for your subscriber loops and secondary toll lines by stringing O-Eighty-Thirty Line Wire. And you'll be building for long, trouble-free life.

Write us today for prices, sag data and staking tables.

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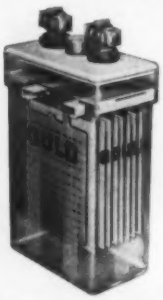
with a trouble-free **gould**



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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Humphrey-Price REA Bill passes . . . evidence that heckling season is on in Congress. Discusses whether probable veto of bill will be sustained. Inside report on selling-by-telephone meeting. Bill to regulate subscription TV introduced. Bell companies file revised TWX rates.

THIS SEEMS to be the heckling season as far as relations between Congress and the administration are concerned. And with the "loyal opposition" in such a dominant majority position in Congress, it is only natural that most of the pushing and shoving comes from that quarter. The administration, now coasting towards the end of its constitutional term in 1960, is mostly on the receiving end.

If one wanted to take the time to do one of those profound "political analysis" jobs to explain the reasons behind this barrage of brickbats on Capital Hill, he could point to a number of factors: the jockeying of political candidates for headline publicity; the strong resurgence of the "liberal wing" of the Democratic party; the partisan need for blackening the record of the administration before the issues emerge for the 1960 campaign, and a host of other things.

But the simplest explanation would be that the administration, as a *target*, is shrinking with each calendar day. And the political snipers have to score as many hits as they can while the target is still there. It will not be long now before these same sharpshooters will be taking shots at each other, when the state primary season gets under way.

The impact of this "era of ill feeling," so to speak, will be a negative one on the accomplishment of Congress. There will be more talk and less action; more argument and less legislation. And when the smoke of the session clears away, the American people will have to decide who has covered himself with credit or discredit during this period of infighting.

Typical of the harassment, and of some direct interest to the telephone industry, is the struggle now going on to strip from the Secretary of Agriculture, Ezra Taft Benson, the statutory authority to supervise Rural Electrification Administration loans. Benson has never been a popular figure, especially with farm state Congressmen. So when the National Rural Electric Cooperative Association virtually asked the Democratic leadership for Benson's scalp on an REA platter, they were glad to agree. They had reasons of their own for giving Benson a hard time. Like that line of the paid killer in the old gangster comedy, they seemed to say: "You mean *him?* Oh, sure; we'll shoot him for nothing; be my guest!"

The Humphrey-Price Bill, which has now passed both houses of Congress with sweeping majorities, is pretty obviously a "spite" bill. That is because it has no practical importance except to register a congressional vote of "no confidence" in the first Secretary of Agriculture to pit his own political life against the demands of farm elements for preferences and benefits which he feels are unjustified burdens on the federal taxpayers. Heretofore the usual pattern of the Secretary of Agriculture, in any administration, has been to whoop it up for anything the farm groups asked for, and then leave to the White House and others the unpopular job of saying "No," to excessive demands.

The Humphrey-Price Bill would not remove REA entirely from the Agriculture Department. If it did, it would make a little more sense. It would put REA on its own responsibility, administratively as well as financially. But the bill, passed by Congress, amounts to placing the REA baby in split custody. The Secretary of Agriculture will continue to have the responsibility for the care of the child, but the farm bloc in Congress hopes to have the main say about spending REA money.

This is not going to work; as long as Benson and REA Administrator Hamil are on the job—which will be to the end of 1960. Administrator Hamil has already said that Benson has never reversed him (Hamil) or made any decisions colored by political considerations. So, we can assume that if Benson and Hamil continue in such agreement until the end of 1960, an enactment of the Humphrey-Price Bill would not make the slightest policy difference in the granting or withholding of REA loans. But it would, of course, be a slap at Benson and that seems to be the main idea.

Despite all the arguments of those in favor of the bill that they are trying to rescue an official (Hamil), who insists that he does not want to be rescued, and does not need to be rescued, the counter-argument is at least worthy of some consideration. The counter-argument is that financial and administrative responsibility for subordinate agencies ought to be placed in the same top official.

That is an elementary principle of sound government administration. It was not invented or first voiced since the Eisenhower administration took over. It was a principal repeatedly propounded by the Hoover Commission. As Secretary Benson put it, it is "inconceivable" that he should be held responsible for the administration of

REA, but denied any supervision over its fiscal operations.

Will the REA Bill Stand?

As these lines are written, it is not known whether President Eisenhower will veto the Humphrey-Price Bill. But it is generally expected that he will. The reason is that he could scarcely do otherwise with a piece of legislation so obviously directed against a Cabinet officer of his own choosing. But the question arises whether the veto will be sustained.

The size of the majority for the bill in the Senate would indicate that it probably will *not* be sustained in that chamber. As reported in this department last week, the Senate passed the bill 60 to 27. And since only seven Republicans and two Democrats crossed the line, it could be said that the vote was mainly partisan in character. So those who voted for the bill in the Senate have no political loyalty at stake to change their views simply because the President vetoed the measure.

In the House, the outlook is closer—much closer. The bill passed by a majority of 254 to 131. This was a scant three votes short of the necessary two-thirds majority required by the Constitution for overriding the veto of the President. But opponents of the bill should not depend too much on that.

Speaker of the House Sam Rayburn is one of the best political poker players in the business. He does not play all his cards until the chips are down. When the voting on passage of the bill was taking place, Speaker Sam could have had those extra three votes by simply walking over to the Democratic cloakroom and whistling. He could have more than that. But Speaker Sam will hold his reserves until the question comes up on sustaining the veto.

That does not mean that this reporter thinks the veto will be overriden. There are other offsetting factors, including a number of farm state Republicans who voted for this bill to satisfy the strong co-op lobby. But when the issue becomes one of sustaining or overriding the veto of the President of their own party, they are, in a sense, putting their own political heads on the block. And a good many will think twice about that before they do it.

But the outcome will be close. And it is this writer's guess Ike will be sustained by a razor edge. One thing is sure, the co-op lobby will move heaven and earth to beat Ike on this one. It would certainly be a feather in its cap if it did so. No lobby, not even the strong organized labor union lobby, has been able to override a single veto by President Eisenhower on a major bill.

Convention Calendar

1959

Association	*Date*	*City*	*Hotel*
Indiana	May 6 and 7	Indianapolis	Claypool
Wisconsin	May 13 and 14	Milwaukee	Plankinton House
Kansas-Missouri*	May 25 and 26	Kansas City, Mo.	Continental
Pennsylvania	June 1, 2 and 3	Buck Hill Falls	Buck Hill Falls Inn
California	June 3, 4 and 5	Los Angeles	Ambassador
Washington-Oregon*	June 11, 12 and 13	Seattle	Olympic
New York	June 15, 16 and 17	Schroon Lake	Scaroon Manor
Alaska	September	Anchorage	Unannounced
Tennessee	Sept. 9 and 10	Nashville	Hermitage
Arkansas	Sept. 14 and 15	Hot Springs	Arlington
Michigan	Sept. 15, 16 and 17	Grand Rapids	Pantlind
Rocky Mountain	Sept. 16, 17 and 18	Salt Lake City, Utah	Utah
New England	Sept. 21, 22 and 23	Bretton Woods, N.H.	Mt. Washington
West Virginia	Sept. 23 and 24	Davis	Blackwater Falls Lodge
North Carolina	Oct. 5 and 6	Pinehurst	Carolina
USITA Annual Convention	Oct 11, 12, 13 and 14	Chicago	Conrad Hilton
Virginia	Oct. 29 and 30	Roanoke	Roanoke
Alabama	Nov. 9 and 10	Birmingham	Thomas Jefferson
Georgia	Nov. 11 and 12	Atlanta	Dinkler-Plaza
Oklahoma	Nov. 18 and 19	Oklahoma City	Skervin
Florida	Nov. 30 and Dec. 1	Jacksonville	Robert Meyer

*Joint Convention

If the co-op boys can do this, they will be entitled to all the prestige that goes with the top pressure group. They could bask in the reputation of being perhaps the most powerful single political influence in Washington since the anti-saloon league of prohibition days. Congressmen will bow to their passage and jump to their call.

If you want other examples of the heckling season, consider the fact that the nomination of Admiral Strauss to be Secretary of Commerce has been before the Senate for weeks. The nomination of Mrs. Luce to be Ambassador to Brazil was likewise delayed. And when she was questioned by the Senators, the questions had little to do with her qualifications as an ambassador.

One could cite other instances of this heckling. We will probably see more vetoes by the President during this last year and a half of his administration than in all the preceding period he has been in office. These will mainly be spending bills which the President will have to veto in the interest of some semblance of budget balancing. But the role of the spender is popular. So this makes good political sense, especially when the unpopular role of saying "No" lies elsewhere. If the President can manage to maintain his perfect record, to date, on vetoes, he will be lucky indeed.

How to Sell by Telephone

Last week your correspondent slipped over to the neighboring city of Baltimore to look in on a Maryland utility industry meeting. While there, he happened to drop into one of the neighboring meetings, going on at the same time at the same Baltimore hotel. It happened to be an afternoon session of the 12th annual sales conference of the real estate board of greater Baltimore.

This writer has no interest in Baltimore real estate. (Well, a night spot now and then, perhaps.) But he was intrigued by the advance billing given to one program speaker, Mr. Jack Schwartz of Los Angeles, "How to Sell by Telephone." It appeared that Mr. Schwartz is rated by some observers as one of the most dynamic telephone personalities in the selling game. He is personally so successful at it that he is invited clear across the country to tell others how he does it.

Telephone company people themselves probably differ a great deal on the advisability of encouraging or even tolerating the growth of organized and

systematic salesmanship via the telephone.

But regardless of how you feel about it, it is not a bad idea to find out something about how these "dynamic personalities" operate. Mr. Schwartz lists "three keys to developing a telephone personality." Your correspondent wrote these down very carefully on the back of a B&O timetable. Here they are: (1) *Voice.* "Put a smile in your voice by setting a mirror before you on your desk whenever you talk on the telephone." (2) *Mental Attitude.* "Be enthusiastic to give out before you receive; impress listener with your sincere desire to help him." (3) *Confidence.* "Believe in yourself, in your ability to do a good job."

Before you start borrowing your secretary's mirror for this experiment, listen to what Mr. Schwartz says about the pay-off, on this kind of technique. First of all, he says it is possible for a smart salesman, with a little practice, to talk to 10 potential prospects an hour. Just using the telephone one hour a day, on a five-day week basis, that means 50 contacts a week or 2,500 a year. (Mr. Schwartz must be a strict two-week vacation man, with no time off for bad behavior.)

Now, if you call your shots right (this probably means using pretty good sucker lists), Mr. Schwartz thinks that it is feasible to develop 1,000 good leads. You've got to admit that is pretty good pay dirt, out of 2,500 contacts. In prospecting for such likely leads, Mr. Schwartz made a number of practical suggestions, such as contacting satisfied buyers and customers, combing the pages of the daily newspaper for news of people who have been promoted to better jobs or transferred; people newly moving into the community; and for other reasons people who are more-than-average receptive to selling suggestions. Here are four "cardinal points" of advice on selling by telephone:

(1) *The Social Call Back to Keep Them Happy.* Says Mr. Schwartz: "Call to inquire if they are still happy with their purchase. Do they have friends who might be interested in buying or selling, and are they thinking of buying again?"

(2) *Read All of Your Newspaper.* "Newspaper leads are easily the best source of prospects, so far." But you have got to read the whole deal—not just the sports, stocks, or comics. A marriage, a promotion, a fire or accident, even a religious appointment contains an opportunity for the right contact, to the right person, at the right time. "Open up the opportunity for you to make the acquaintance of the person by a telephone call. Extend congratulations, offer your services and win the sympathetic ear of the secretary or telephone operator."

(3) *The Blind Call.* Here you depend on the mere name of the telephone company exchange to suggest the general character of the neighborhood—business, residential, extra swank or skid-row. "If you are selling a quality product, you know where the bulk of the prospects reside. Concentrate your calls in the exchanges serving areas where quality buyers are concentrated. Working men and women live in a different section. You must know your city to get the buyers in any particular line speedily."

(4) *Be Interesting*—even witty, maybe, but always pleasant and well-informed. Mr. Schwartz cited the case of a pet shop that boosted sales 5,000 per cent (that is what he said) by having the girl answer the telephone "woof woof," and then adding the name of the pet store.

On the point of being prepared, Schwartz warned against the dangers of going off half-cocked, exaggerating, getting excited or argumentative, or (a mortal sin in this business, incidentally) talking with gum or food in your mouth, or trying to smoke a cigar, or trying to do something else which distracts your full attention. Especially when you identify your firm—be pleasant. If you cannot be pleasant yourself, see that somebody else with a "smiling voice" answers the telephone. Above all keep congenital dopes, who automatically say "I dunno" whenever anyone speaks to them as far away from your telephone as possible.

So-o-o-o! Having imbibed all this wisdom from Mr. Schwartz, your correspondent was just spoiling to give it the old college try. He got a large mirror and put it on his desk and started to make faces at it in front of the telephone. It must be admitted that the first impression was a little discouraging, especially when the old five o'clock shadow painted vague overtones of Fidel Castro. Then, too, the way office associates begin looking at each other wonderingly and tapping their foreheads with their fingers was a bit distracting, to say the least.

Finally, when yours truly had managed to strike a pose which was at least a reasonable facsimile of a human being, he wondered about the second step. Be enthusiastic! Be cordial! Just then a very disturbing thought crossed my mind, "What am I *doing* here? My business is *buying*—not *selling*. I'm supposed to be an editor!"

(Please turn to page 88)

The Human Side of Business

"Business often is portrayed as hard and ruthless, seeking to take advantage of the unwary, to drive a tough bargain, or willing to ride roughshod over the public when the opportunity is presented.

"A short caused by water seepage through a break in a lead-sheathed telephone cable recently interrupted service to some 600 homes in north Cicero, Ill.

"Illinois Bell Telephone Co., knowing that police protection and, fire protection might be interrupted, and various emergencies might arise, immediately threw in its men, equipment and facilities to repair the cable, which carried 1,200 pairs of wires.

"Cicero police dispatched a safety car, a detective squad car and a three-wheeler unit.

"In half an hour, a mobile telephone unit was stationed in the center of the affected area while a telephone company sound truck advised residents of the emergency and informed them that a special mobile unit was available for use free of charge.

"A ten-man task force, with five or six supervisors, were routed from their homes just at the dinner hour, and moved in to locate the trouble. J. N. Westcott, Cicero telephone exchange manager, had obtained the necessary permits to break ground on lawns under which the cables run, and had alerted both power and water departments, whose own lines might be involved.

"With a geiger-counter type device, the crews began digging through the frozen ground (which was to be replaced when weather moderated). Working all night, the crews restored service by early next morning to nearly the entire area, which had been darkened while electric power was cut off. . . .

"(These are) 'the little extras'—the mobile telephone, advice and information by sound truck, police and electrical departments, on duty until the repairs were made. Many Cicero residents have commented favorably about these 'little extras,' the human side of business. This is the other side of the story."—Editorial in *Cicero (Ill.) Life*.

Testing With The Wheatstone Bridge

By LAMAR S. STOOPS*

IT IS NOT the intent of this article to describe all the many methods of testing that are possible with the Wheatstone Bridge. In fact, the following comments deal with only three specific methods of use out of many possibilities. The methods described are those that have proven their special worth through years of practical application and have stood the test of time.

The Wheatstone Bridge should not be thought of as an instrument to replace the ohmmeter (or voltmeter), but, instead, as an instrument to be used along with the ohmmeter and other equally valuable testing devices.

In many instances, the bridge and the ohmmeter may serve the same purpose, the choice of instrument to be governed by circumstances. However, when attempting to locate the point of a cross (fault) that is not a "dead short," the ohmmeter is useless, whereas the Wheatstone Bridge (Varley Loop) is "made to order."

The Wheatstone Bridge, Varley Loop Test, may be compared to the Apothecary Balance (see illustration) in that, whereas containers of equal weight are common to each side of the druggist's Balance, they thereby cancel out. Similarly, the fault resistance (resistance unknown) in a Varley Loop Test is common to each leg of the bridge and, therefore, has no bearing on the rheostat setting required to balance the legs.

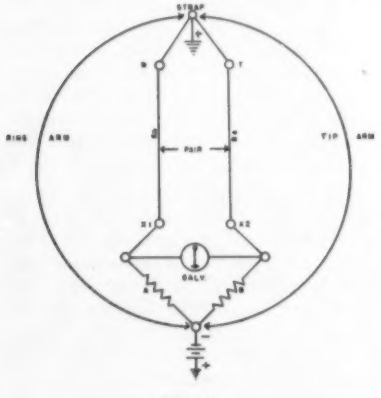

Fig. 1.

Fig. 1 illustrates the basis principle of the bridge circuit. In this illustration, resistance A and resistance B are equal (Ratio Dial set on 1/1). Likewise, the resistance of conductors Ra and Rb are equal. Therefore, battery flows equally through the Tip Arm and the Ring Arm. Consequently, no current will flow between points X1 and X2, as indicated by zero reading of the galvanometer (a galvanometer is simply a sensitive ammeter). This condition represents a "balanced bridge."

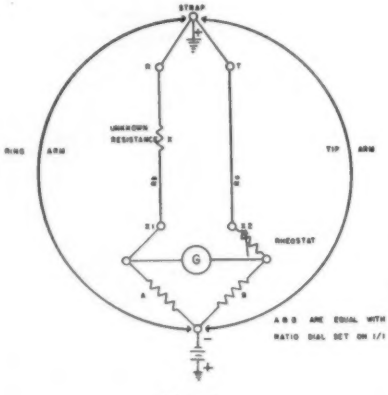

Fig. 2.

Fig. 2 indicates an unknown resistance induced into conductor Rb at point X (point unknown). In order to balance the bridge it now becomes necessary to insert a rheostat (calibrated) in the Tip Arm of the bridge as shown. The resistance of the rheostat, with the bridge balanced, will be the same as the resistance of the fault, thereby restoring the equality of the Tip and Ring arms of the bridge.

The practical use of this circuit is illustrated under the heading, "Direct Reading Varley Test," and is useful in determining the amount of unbalance in a circuit due to high resistance joints, etc.

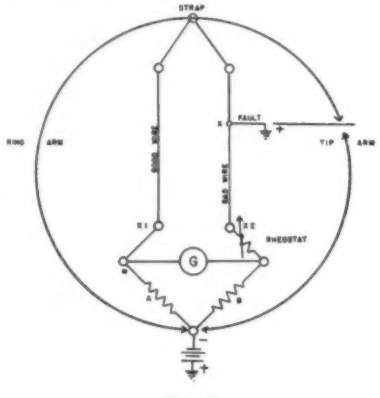

Fig. 3.

Fig. 3 is simply a modification of *Fig. 2* in that positive battery now enters the bridge arms at the unknown point of fault (designated X), instead of at the distant end strap as in *Fig. 2*. *Fig. 3*, therefore, illustrates the basic principle of all Varley tests involving crossed (or grounded) wires.

In this illustration it will be noted that the resistance of the fault has no bearing on the resistance setting of the rheostat (required to balance the bridge) because at zero reading of the galvanometer, positive battery flows equally through the tip and ring arms of the circuit.

In this specific illustration, with A

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Wheatstone Bridge

and B of equal resistance (ratio dial set at 1/1), the rheostat, reading, with bridge balanced, represents the loop resistance (not single wire) of the pair between strap and fault. However, interpretation of the rheostat reading in relation to solving for desired unknowns is dependent on the type of Varley test made (the simple Varley and the three Varley methods are further described in this text).

(NOTE: It should be noted that while the resistance of the fault has no bearing on the required rheostat setting to balance the bridge, it will affect the sensitivity of the galvanometer in that it limits the amount of current flowing in the legs of the circuit. In other words, the fault resistance is in series with the battery circuit.)

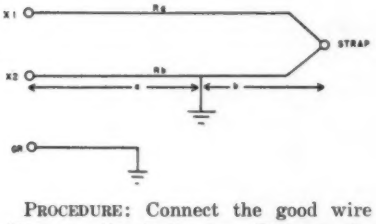
Simple Varley Test

Set Bridge for Varley Loop Test with Ratio Dial set at 1/1.

(NOTE: Ratio Dial must be set only at 1/1 for this test.)

To determine resistance to fault from test and from fault to distant end.

Applicable for rough tests, especially useful on open wire.



PROCEDURE: Connect the good wire (Rg) to the bad wire (Rb) at the distant end. When solving for the distance in ohms from the test to fault (a), this connection, or circuit, may be a repeating coil of any resistance, or any other conductor normally across the line. The coil, or other conductor, however, must be beyond the fault.

Connect the good wire to post X1.

Connect the bad wire to post X2.

Connect a ground, or the wire crossed with the bad wire, to GR.

Set the lever switch to VARley:

With the Ratio Dial set at 1/1 vary the rheostat until a balance is obtained. Call this value R.

Set the lever switch to RESistance:

Measure the resistance of the loop formed by the good and bad wires and call this value r.

When a is distance from test to fault in ohms resistance.

b is distance from fault to distant end in ohms resistance.

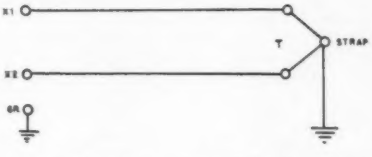
R is Rheostat reading (Varley Test).

r is loop resistance.

Then: a equals $\frac{r-R}{2}$ and b equals $\frac{R}{2}$

Direct Reading Varley Test

For determining amount of unbalance in circuit due to high resistance joints.



Circuit under test must be free from grounds.

Set bridge for Varley Loop Test with Ratio Dial set at 1/1.

(NOTE: Ratio Dial must be set only at 1/1 for this direct reading test.)

PROCEDURE: Connect pair under test to posts X1 and X2. Connect a ground to post GR.

At any predetermined test location (T) strap together and ground the pair under test.

Vary the Rheostat Dials until a balance is obtained. If unable to obtain a balance, reverse the wires at X1 and X2.

Then: The rheostat reading will be the amount of unbalance in ohms.

(NOTE: If there is more than one high resistance joint in the circuit under test the unbalance will be the difference of the sums of all high resistance joints in each conductor. It is of course possible to obtain a balance due to an equal value of high resistance joints in each conductor of the circuit. Such a condition can be detected due to abnormally high resistance of the loop under test. Moving the applied strap (short and ground) nearer to the test will again disclose the unbalanced condition providing one of the high resistance joints has been eliminated from the circuit.)

Three Varley Methods

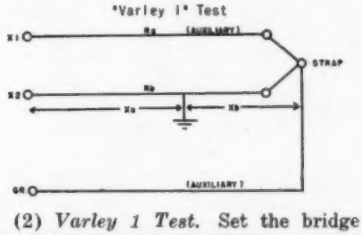
For use when all conductors are bad, making it necessary to use two good auxiliary conductors of any resistance, and a ground, or crossed wire, connection. The auxiliary conductors must terminate at the same place as the bad wire under test.

In this test it is not necessary to predetermine the resistance of the good and bad conductors. All results are obtained from the Varley tests, with the switch lever remaining on VARley.

Reference: Page 17 in Leeds & Northrup Co. Notebook E-53-441.

PROCEDURE:

(1) At the distant end connect (strap) both auxiliary conductors to the wire in trouble. If there is any doubt as to which wire of a bad pair is to be the wire under test, it will be the wire giving the lowest resistance reading when used with either of the good auxiliary conductors. The connections at the distant end may remain the same for all three tests.

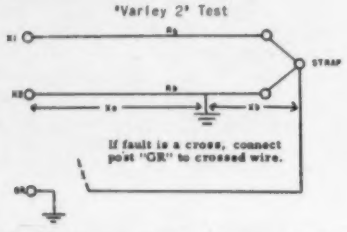


(2) *Varley 1 Test.* Set the bridge for VARLEY LOOP TEST. Connect one of the good wires (Rg) to post X1. Connect the bad wire under test (Rb) to post X2. Connect the remaining good wire to post GR. Set the Ratio Dial to 1/9, and balance the bridge (Rheostat dials). The Ratio Dial must remain on 1/9 for Varley 2 and 3 test. The resulting reading is R1.

(NOTE: If the good wire is of lower resistance than the faulty wire it may be impossible to balance the bridge

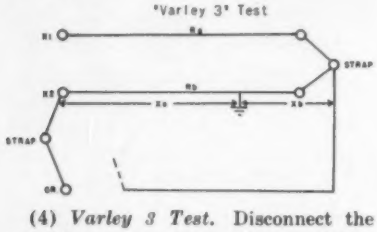
LAMAR S. STOOPS

[indicated by the galvanometer needle deflecting to the left with all four rheostat dials set at zero]. If this condition exists, a small resistor must be connected between the test and the good wire (Post X1). Any reasonable value of resistance may be used which is large enough to restore proper operation. The value need not be known since it is automatically eliminated in the method of test.)



(3) *Varley 2 Test.* Disconnect the good wire from post GR. and connect ground, or crossed wire, to post GR. (be certain the free end of the good wire just removed does not touch any other wires or posts on the bridge as it is still connected to the distant end).

Vary the Rheostat until the bridge is balanced and call the resulting reading R2.



(4) *Varley 3 Test.* Disconnect the ground, or crossed wire, from post GR. and strap (connect) post GR. to post X2.

Balance the bridge and call the result R3.

(5) *Calculate the results as follows:*

When: Ratio Dial is set on 1/9

R1, R2 and R3 are Rheostat Dial readings in test 1, 2, and 3, respectively.

Xa is Resistance from test (Bridge) to fault.

Xb is Resistance from fault to distant end (strap).

Rb is Resistance of bad wire under test (Xa plus Xb) from Bridge to Strap.

Then:

$$\text{Xa equals } \frac{R3-R2}{10}$$

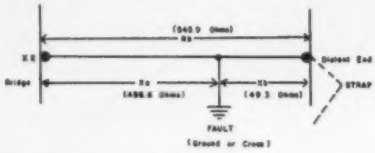
$$\text{Xb equals } \frac{R2-R1}{10}$$

$$\text{Rb equals } \frac{R3-R1}{10}$$

If above calculations are made correctly:

Then: Xa plus Xb equals Rb (proof of arithmetic only).

The following is a sample problem solved by the Three Varley Method.



With Ratio Dial Set on 1/9.
Rheostat readings as follows:

R1 equals 1273.
R2 equals 1766.
R3 equals 6732.

Then:

$$Xa = \frac{R3-R2}{10} = \frac{6732-1766}{10} = \frac{4966}{10}$$

$$= 496.6 \text{ ohms}$$

$$Xb = \frac{R2-R1}{10} = \frac{1766-1273}{10} = \frac{493}{10}$$

$$= 49.3 \text{ ohms}$$

$$Rb = Xa \text{ plus } Xb \qquad 545.9 \text{ ohms}$$

Also:

$$Rb = \frac{R3-R1}{10} = \frac{6732-1273}{10} = \frac{5459}{10}$$

$$= 545.9 \text{ ohms}$$

Obtaining same result from both methods of calculating Rb is proof of arithmetic only.

Conversion of Ohms Resistance Into Distance

In this example it is assumed that the conductor under test (Rb) is 22-gauge B&S copper wire. It must be assumed that the test lead (to X2) is also the same size and type conductor, otherwise additional calculations must be made.

OPTION I. Consulting the accompanying table of annealed copper wire No. 22 B&S gauge conductor, at 70 degrees F., runs 60.47 feet (single conductor) per ohm.*

From sample problem, therefore:

Xa = 496.6 (ohms) × 60.47 (feet) = 30,029.4 feet

Xb = 49.3 (ohms) × 60.47 (feet) = 2,981.2 feet

Rb = Xa plus Xb 33,010.6 feet

*It is sometimes convenient, and advisable, to determine "on the spot" factors of conductor feet per ohm by measuring the ohms resistance of a known length of wire similar in characteristics to the wire under test. By so doing, temperature corrections, and other variables, are automatically reckoned with.

Also:

Rb = 549.9 (ohms) × 60.47 (feet) . . . . 33,010.6 feet

(NOTE: Quite obviously, due to inconsistencies in the manufacture of wire, the use of conversion tables (feet per ohm, etc.) may result in substantial errors, especially where the length of the cable under test is quite long. However, use of tables is usually justified as a means to quickly sectionalize the trouble.)

OPTION II. In the following calculation, it is assumed the size and type of wire (Rb) is the same from test to distant point, and that the length of the wire under test is known. For convenience assume the length of the wire (Rb) is known to be 33,000 feet.

Bearing in mind that the relationship of Xa (or Xb) to Rb results in the same percentage factor for both ohms and feet, the following calculations may be made:

Applying the known values in ohms—

Then:

$$\frac{Xa}{Rb} = \frac{496.6}{545.9} = 0.91 \text{ or } 91 \text{ per cent.}$$

That is, Xa equals 91 per cent of total resistance of Rb,

Therefore, Xa also equals 91 per cent of total distance of Rb in feet.

Then:

Xa = 91 per cent × 33,000 (feet) = 30,030 feet, distance test to fault.

Xb may be calculated in the same manner.

(NOTE: In actual practice, where more accuracy may be required, the length of cable under test should be reduced to a minimum. Therefore, once the fault is isolated to a relatively short section, it may be desirable to set up the bridge at the nearest accessible point [to the fault] and make new measurements and calculations. Again, it should be noted that, in general, the accuracy of any test diminishes as the length of the conductor under test increases.)

Interpreting meaning of calculations where multiples appear as branches to main conductor, such as branch cables, or lines, and bridged terminals:

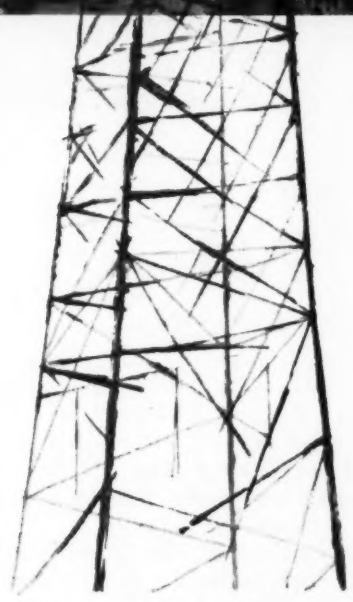
(See cut on page 67.)

(1) With bridge set up at X, and the strap applied at D, assume the fault calculates to be 2,000 feet (Xb) from D toward the test point. Said result does not necessarily indicate the fault

(Please turn to page 67)

Microwave comes to Dallas on a Blaw-Knox Tower

Building in a crowded downtown location required a special self-supporting tower. This Blaw-Knox tower was built to withstand high winds common to the area.



Designed for future expansion, this 250 foot tower is equipped with ring mounts that permit precision orientation . . . allow additional dishes to be installed with less work and less cost.

Keeping pace with the times, the General Telephone Company of the Southwest turns to microwave to extend service, simplify future growth and lower circuit costs. In bringing microwave service to 16,000 of its 250,000 telephones, this progressive company relies on Blaw-Knox towers.

From Texas to North Carolina, from Florida to Ohio, these efficient microwave towers are paying off in the nation's most modern communication systems. Backed by over 40 years of tower experience, Blaw-Knox designs to *established* specifications, builds to meet *individual* requirements. By consulting skilled Blaw-Knox engineers you are assured of towers that best meet your present needs and can allow for future expansion.

Blaw-Knox's Microwave Tower Booklet covers the outstanding operating advantages of microwave, and outlines a complete service that ranges from tower design through fabrication and erection. Write for Booklet 2538 today.

Microwave Towers—Guyed and self-supporting towers for Microwave, AM, FM, TV, Radar, Communications . . . Transmission Towers . . . Parabolic Antennas . . . Special Structures.

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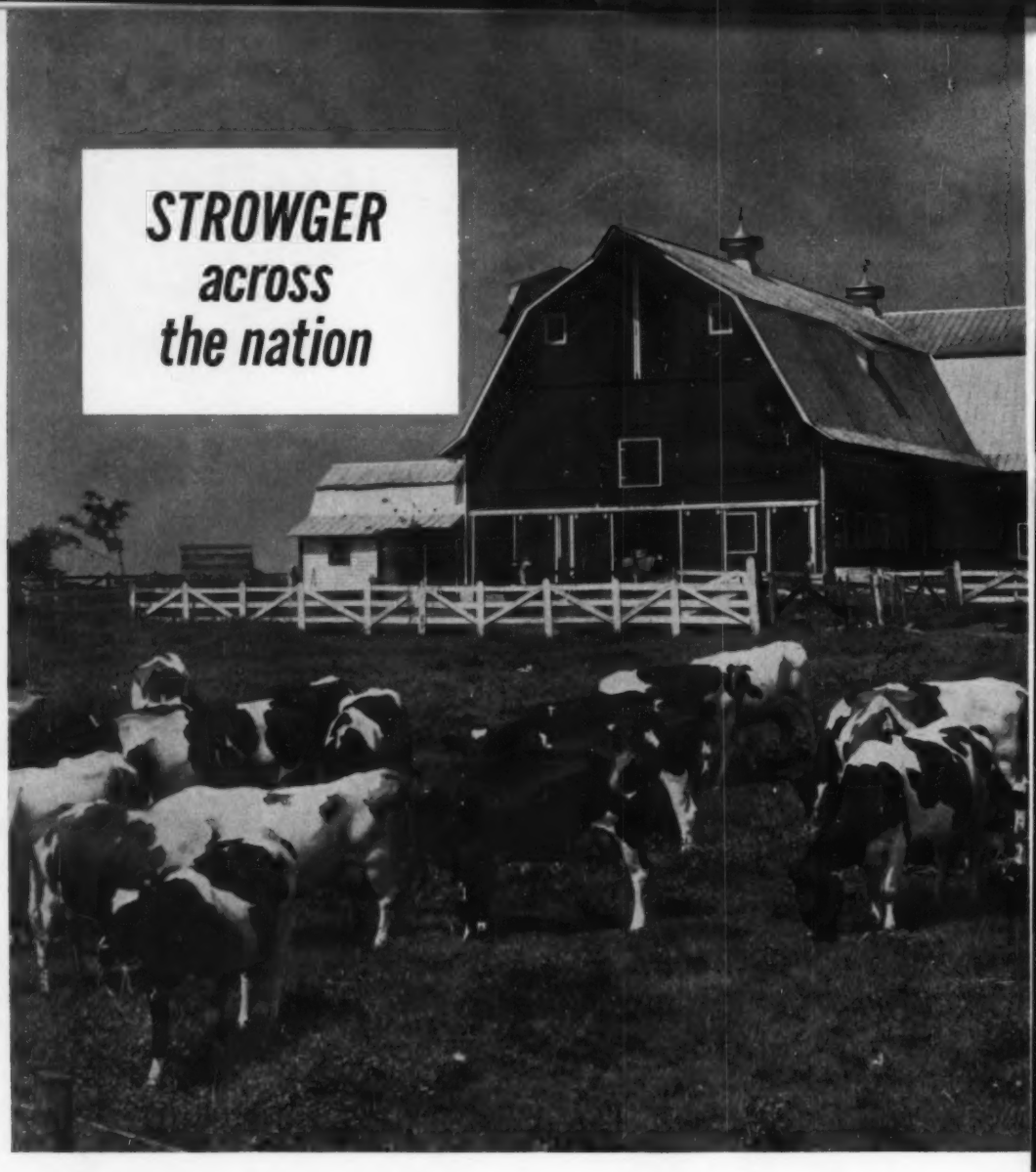


DAIRY FARMING is the principal industry in Middletown. Over $20,000,000 worth of dairy products were sold by Orange County farmers last year! The area also produces a large amount of fruits and vegetables.

MIDDLETOWN, N. Y.

Despite its growing economy and closeness to Manhattan, Middletown retains its provincial charm of over 200 years ago

About 65 miles from the skyscrapers of New York City, centered in rural Orange County, is Middletown, New York. This quiet city was settled by a group of English farmers prior to 1755. Since the first settlement, farming has been the backbone of Middletown and given it a growing prosperity.

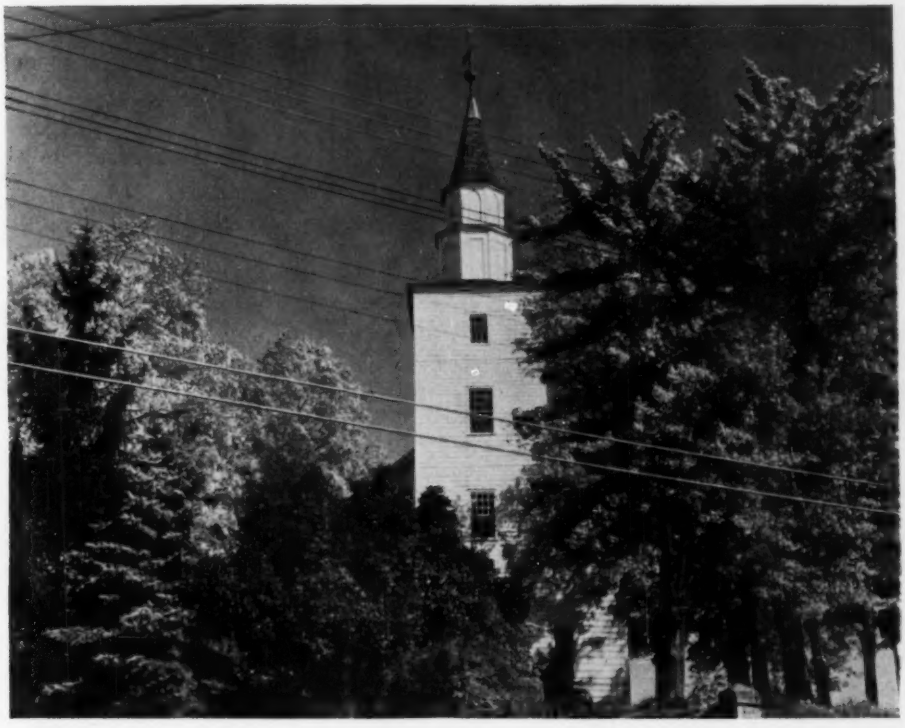
Middletown's position in a rich, agricultural region provides a high volume of retail trade. Its stores serve 161,000 people within an area of 2,650 square miles. Middletown has 33 industrial plants which manufacture a variety of products. These include cosmetics, clothing, valves, industrial loud-speakers, patent and upholstery leather.

Middletown is served by Orange County Telephone Company. Each day Automatic Electric step-by-step switches work behind the scenes to give dependable, low-cost telephone service. Yes, Middletown is another success story of Strowger Across the Nation.

NEW YORK CITY is only an hour and a half drive from Middletown via modern super-highways. On week-ends, residents take advantage of this close proximity to visit Manhattan for sightseeing and shopping.

ORANGE COUNTY TELEPHONE COMPANY has 10 exchanges. The Middletown exchange (above) is a pioneer in dial service, having converted in 1930 with Strowger. Today, Middletown has 5,400 lines. Charles C. Chappell (inset photo) is president of Orange County Telephone Company.

21 CHURCHES, representing 15 denominations, give testimony to the importance of religion in Middletown. The town also has three service clubs, a Y.M.C.A., two University Clubs, Boy and Girl Scouts, 4-H Clubs and several choral societies.



AUTOMATIC ELECTRIC

NORTHLAKE, ILLINOIS

Subsidiary of **GENERAL TELEPHONE**

REA Okays Nine Telephone Loans Totalling $6,202,000

TELEPHONE loans totaling $6,202,000 were approved by the Rural Electrification Administration over the two week period, Mar. 30 to Apr. 10, as follows:

Chisago City (Minn.) Telephone Co.; $136,000; Mar. 30.

These funds will enable the borrower to improve service for 233 subscribers and to furnish initial service to 16 subscribers. The existing subscribers are now receiving common battery service from an exchange of the General Telephone Co. of Wisconsin. The borrower has recently acquired 24 miles of line of this exchange from the General company. Funds are included in this loan to reimburse the borrower for this acquisition.

The Chisago City company proposes to construct a new automatic central office at Taylors Falls, Minn. The borrower has now received REA loans totaling $1,048,000 which will benefit 2,405 subscribers. Three of the proposed five automatic exchanges of the system are now in operation.

Ernest E. Strand is president and Lambert J. Greene is manager of the Chisago City company.

•

Midland Telephone Co., Champaign, Ill.; $499,000; Apr. 7.

This loan will enable the borrower to improve service for 562 subscribers and to furnish initial service to 267 subscribers.

The borrower has recently acquired the following companies which it plans to rehabilitate and consolidate with its existing system: Fayette County Mutual Telephone Co., Sefton; Oconee Telephone Exchange; and the Home Telephone Co., Arenzville. The acquired facilities are providing magneto service. Provision is made in this loan to reimburse the Midland company for the acquisitions.

The borrower's plans include new automatic central offices to replace the magneto facilities at Arenzville, Oconee and Sefton. Present and previous REA loans to Midland total $1,180,000 which will benefit 1,981 subscribers. The system, when complete, will consist of eight exchanges.

James L. Capel is president and Max G. Hoagland is manager of the Midland company.

•

W.E.G. Dial Telephone, Inc., Gardner, Kan.; $414,000; Apr. 7.

These funds will enable the borrower to improve service for 346 subscribers, furnish initial service to 364 subscribers, expand its present headquarters building in Gardner, and install automatic mobile radio telephone facilities.

The subscribers who will receive improved service are now served by the Lebo Telephone Co. which provides magneto service. The borrower has recently acquired and plans to integrate the Lebo facilities. A new automatic office will be constructed at Lebo. Only 38 of the subscribers who will receive initial service are in the Lebo area; the remaining 326 are located over the whole system.

The automatic mobile radio telephone facilities proposed for this system will be used for maintenance, and to serve five subscriber mobile units. REA loans to W.E.G. now total $1,666,000. They will finance new and improved service for 4,049 subscribers. Four of the proposed six exchanges of the system are now providing dial service to approximately 3,050 subscribers.

Ross Gault is president and manager of W.E.G. Dial Telephone, Inc.

•

West Kentucky Rural Telephone Cooperative Corp., Mayfield; $189,000; Apr. 7.

These funds will enable the borrower to improve service for 149 subscribers and furnish initial service to 193 subscribers. The existing subscribers are now receiving magneto service from the Cottage Grove (Tenn.) Telephone Co. The borrower proposes to acquire these facilities with loan funds.

The borrower plans to construct a new automatic central office at Cottage Grove. The West Kentucky Cooperative has now received $2,543,000 in REA loans which will finance new and improved service to 5,829 subscribers in Kentucky and in Tennessee. The 14 exchanges located in Kentucky are now providing dial service to approximately 2,880 subscribers. The Puryear, Tennessee exchange is scheduled for cutover this spring. The present commercial office at Mayfield will serve the whole system.

L. W. Murdock is president of the West Kentucky Rural cooperative Corp. and W. L. Parr is manager.

•

Ace Telephone Association, Houston, Minn.; $666,000; Apr. 7.

This loan will improve service for 999 subscribers and furnish initial service for 196 subscribers in Minnesota and in Iowa.

The subscribers who will get improved service now receive magneto service from the following organizations: The New Albin (Ia.) Telephone Co. and the Hokah (Minn.) Telephone Co. The borrower has recently acquired these facilities.

Included in this group of organizations is the Nodine (Minn.) Telephone Switchboard Association. The borrower plans to acquire these facilities by issuance of common stock.

Subscribers on several small switcher line companies in the vicinities of Ridgeway, Minn. and Highlandville, Ia. propose to abandon their facilities and become regular subscribers of the borrower.

The borrower's integration plans include: (1) Purchase of a site and construction of new automatic central offices at New Albin and Hokah; (2) purchase of a site at Highlandville, and removal of the present Arendahl automatic building at Highlandville; (3) expansion of existing Peterson automatic facilities to serve the Arendahl subscribers; and expansion of present Houston and Dakota automatic switchboards to serve the Nodine and Ridgeway communities.

REA loans to the Ace Telephone Association now total $2,482,000 which will finance new and improved service for 5,351 subscribers in Minnesota and in Iowa. The completed system will consist of 13 exchanges of which nine are in operation providing dial service to approximately 3,170 subscribers.

J. H. Lewis is president of the Ace Telephone Association and Roger Bunke is manager.

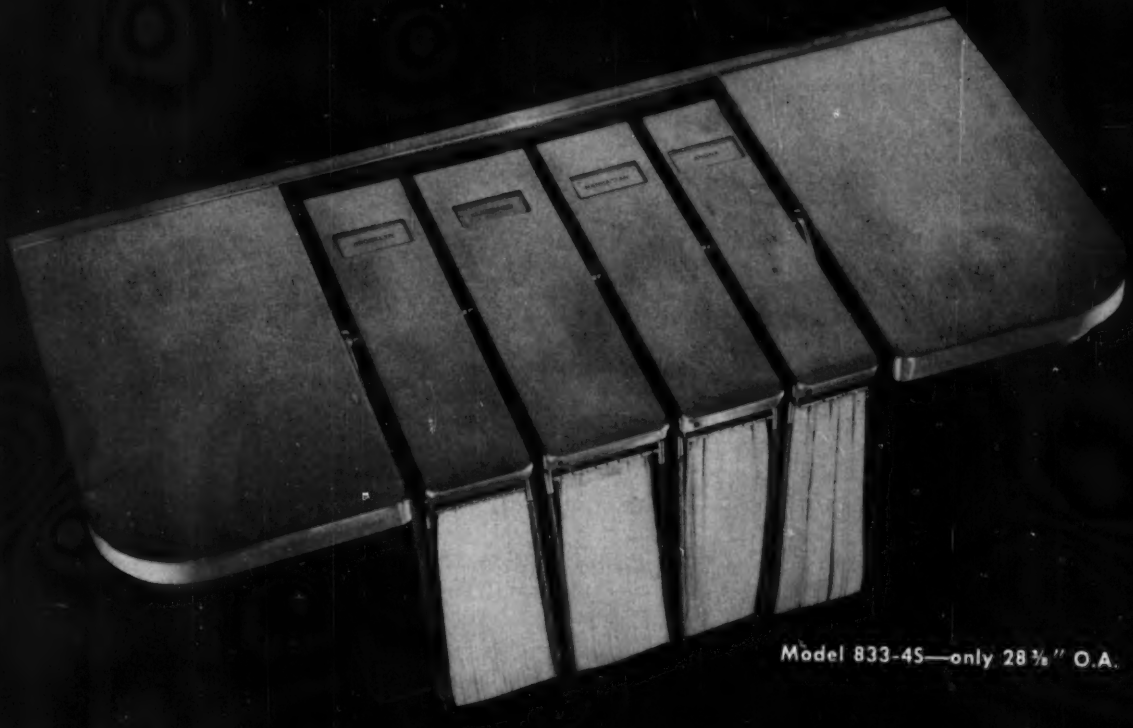
•

Southland Telephone Co., 205 S. Main St., Atmore, Ala.; $1,716,000; Apr. 10.

The new borrower plans to furnish initial service to 1,267 subscribers and to improve service for its 3,467 existing subscribers in Alabama and in Florida. At present the borrower is providing common battery service through its Atmore exchange, and dial through its Camden, Thomaston and Walnut Hill central offices. The Walnut Hill exchange is located in Florida.

A new automatic central-commercial office building will be constructed at Atmore. The Thomas and Walnut Hill automatic exchanges will be used in place. The Camden building will stay in place but the borrower plans to acquire the presently leased automatic central office equipment in the building. A portion of this loan will refinance

directory holder



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Central office terminals and associated equipment for interconnection between mobile radio circuits and either manual or automatic dial telephone exchanges are now in production. Secode equipment is fully compatible with Bell and Independent telephone practice. It is flexible, low cost, and simple to install.

Advantages of New Secode Dial Signaling Systems

Operates from standard telephone dial • Fully compatible with existing radio-telephone-standards • Telephone quality engineering for ultimate reliability • Individual mobile identification for automatic ticketing • Unlimited number of mobiles per radio channel • Ample call code capacity for nationwide numbering and roving service • No special instruction needed, mobile telephone operation simulates standard land line practice • Only the called mobile can answer a call • Only the calling mobile can seize and release a line • Full channel access for emergency communication • Conelrad control available • Repetitive ringing at the mobile • Superior fringe area operation • No FCC waivers required.

SEND FOR FREE BOOKLET An informative eight-page booklet titled, "Selective Signaling Equipment for Mobile Radio Systems" is yours for the asking. For your free copy along with the name of your nearest Secode engineering representative who will be happy to answer your questions, please address Dept. 734.

7

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SELECTIVE CONTROL DEVICES
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the borrower's existing indebtedness.

Minor Corman is president and W. F. Corman is manager of the Southland company.

•

Siskiyou Telephone Co., Etna, Cal.; $353,000; Apr. 10.

This loan will enable the borrower to furnish initial service to 328 subscribers, construct a new headquarters at Fort Jones, and complete its authorized system.

REA loans to this borrower, now totaling $1,150,000 will finance new and improved service for 1,558 subscribers. The completed system will consist of exchanges at Etna, Fort Jones, Hamburg and Happy Camp. The borrower plans to cutover its system to automatic operation in October.

H. A. Dannenbrink is president and Mrs. Eleanor Hendricks is manager of the Siskiyou company.

•

Cap Rock Telephone Co., Spur, Tex.; $550,000; Apr. 10.

The loan will enable the new borrower to acquire the Spur automatic exchange, which serves 695 subscribers, from the Southwestern Bell Telephone Co. The funds will also finance initial service for 259 subscribers in the Afton, Dry Lake and Hackmont exchanges. Included in the acquisition is a combined headquarters and automatic central office building which the company will use as its main headquarters.

The borrower, a successor to the Cap Rock Rural Telephone Cooperative, will assume the assets and liabilities of the cooperative which provides dial service to 623 subscribers through exchanges at Afton, Dry Lake, Girard, Hackmont, Jayton and Peacock. Service will be extended to an additional 257 subscribers under REA loans previously approved to the cooperative.

The Cap Rock company was incorporated March 10, 1959.

The assumption and assignment of the Cap Rock Rural cooperative properties and this loan total $1,383,000. The funds will enable the new Cap Rock Telephone Co. ultimately to provide new and improved service to 1,834 subscribers. The completed system will consist of the seven automatic exchanges now in operation and serving approximately 1,318 subscribers.

O. J. Barron is president and James R. Wright is manager of the Cap Rock company.

•

Telephone Utilities of West Virginia, Webster Springs; $1,679,000; Apr. 10.

The borrower plans to acquire the Pocahontas Telephone Co., Marlinton;

(Please turn to page 89)

FOUR WIRE TRANSISTOR

THE MAGIC world of semi-conductors has yielded another device for electronics. This time it's a "field effect tetrode," a sort of four-terminal transistor. It is made of two wafers of semi-conductor material, one with negative, and the other with positive characteristics, which meet at a diffused junction. Each disk has a circular trough etched part way through it, so that each side of the device consists of a disk, surrounded by a ring. A wire is connected to each disk and each ring.

This makes a four-wire device out of it, yet it has no counterpart either in the vacuum tube or transistor field. The new device, still in the experimental stage, will function as a transformer, gyrator, isolator, modulator, or negative resistance.

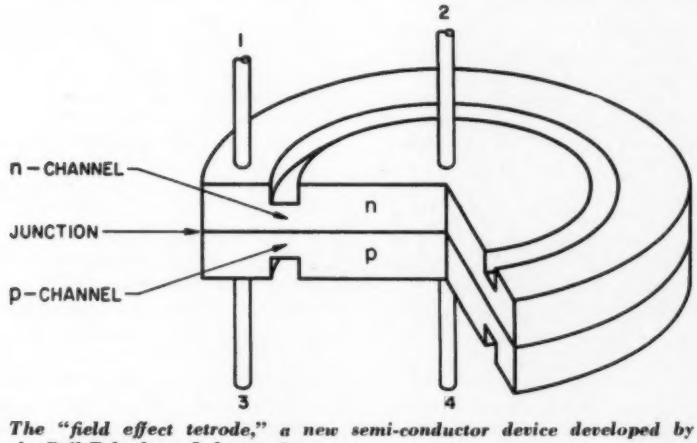
In action, the new tetrode displays a change in the thickness of the depletion layer when a voltage is applied across the junction. This change results in a change of resistance at the bottom of the etched trough.

As a transformer, the tetrode has a size advantage in low frequency use. As a gyrator, it is expected to be of considerable circuit interest. (A gyrator is a non-reciprocal four-terminal network, which acts similar to a transformer, while exhibiting a 180° difference in phase shift depending on the direction of transmission.)

One gyrator function is impedance inversion. For example, it should be possible to use the new device to convert the reactance of a miniature capacitor to that of a high-Q inductor.

If biased properly, the new device will function as an isolator, permitting the passage of alternating current in one direction only.

The new tetrode was developed by R. M. Warner Jr., and H. A. Stone Jr., of Bell Telephone Laboratories.



The "field effect tetrode," a new semi-conductor device developed by the Bell Telephone Laboratories.

WIRED MICROWAVE

THE HUNDREDS of miles of pole lines owned by railroads and communications companies are not about to become obsolete.

According to T. Hafner of Surface Conduction Inc. of New York City, the use of microwave frequencies on wire lines will greatly expand communication facilities, and permit extension of wire line service in areas where radio cannot be licensed because of lack of spectrum space.

Writing in the March issue of *Electrical Engineering*, he explains the technique of the "G-line," a single wire line which will carry microwave signals. The G-line is simply a wire with a dielectric coating on it. It might be regarded as a development of the coaxial cable, in which the outer conductor is removed.

The result is a wire line which will carry signals in the 100-mc to 1000-mc range. It will do this with less loss than would be encountered with coaxial cable. Further, the cost of installing the wire is only a fraction of the cost of coaxial cable.

Because supports for the wire, as well as sags and bends, add to the losses of G-line, a very simple suspension method has been developed. The wire is held to the crossarm or other supporting structure by means of loops of nylon cord. Ninety degree bends are made by using several smaller bends, trolley fashion.

The line functions by means of surface wave transmission. It can be coupled to the radio apparatus by means of a short length of coaxial cable. Coupling between the coax and the G-line is by means of a metal cone. The wire emerges

from the center of the cone. The cone, in effect, launches the microwave signal along the wire.

The G-line gets its name from the initial of the physicist George Goubau, who was the first to propagate non-radiating waves along a line of this sort. Normally, high frequency currents sent along a wire will quickly radiate into space. The thin coating of dielectric material on the G-line causes the field energy to become concentrated into an invisible coaxial cylinder of small radius.

According to Mr. Hafner, G-lines could be closely spaced on crossarms without crosstalk troubles, or interference from outside sources, such as automobile ignition systems. G-line is presently being used by the Signal Corps at Fort Monmouth for telephone transmission, and at Helena, Mont., for television.

RESISTOR NOISE

EVERY resistor has a certain amount of built-in noise. Even if no current flows through it, a resistor develops "thermal noise." This noise, which appears as a fluctuating voltage across the terminals of the resistor, is dependent only upon the temperature and the value of the resistance. It is independent of frequency.

Once a resistor is put to use, another kind of noise develops, called "current noise." This noise is dependent upon the type of resistive material, the fabrication process, and the structure, size, and shape of the resistor. In general, the frequency of the current also affects the noise.

In most applications, noise of both of these varieties can be ignored, because they are very low in value. However, in some cases, such as high gain audio amplifiers and infrared detectors, current noise becomes important because it can mask the signal.

The National Bureau of Standards has now developed a method of measuring these kinds of noise. Using modified standard laboratory apparatus, the bureau has made up six test sets, which have been delivered to the Navy.

Each test set includes an electrometer, a sound level meter, a voltmeter, an attenuator, a variable dc supply and a signal generator. The resistor to be tested is placed in a shielded box, so as not to be affected by power line hum or broadcast stations.

ELECTRONIC SWITCHING

SOME TIME next year the Bell System will make a field trial of the first electronic telephone switching system. This has called for the development of special types of transistors to be used for switching purposes. The Bell Telephone Laboratories has developed a system in which it uses printed circuit cards for sub-assemblies. These "circuit packages" are readily accessible for maintenance, but because of their construction, they do not have a metal chassis to function as a "heat sink" to carry away the heat dissipated by the transistors.

Accordingly, special transistors have been made which are enclosed in copper jackets. The copper conducts the heat from the transistor to the surrounding air, and convection currents in the air accomplish the cooling.

The electronic switching system will be of the common control type, with transistors acting as pulse generators, pulse amplifiers, and memory or storage elements.

The talking path connections will use gas-tube switches for the telephone conversations, in the present system. However, a further development, now in the planning stage, would use transistors in both talking and control circuits.

UNESCO STUDIES COMPUTERS

AN international conference on ways in which new electronic computers and information-processing techniques can best be put to work for mankind will be held by the United Nations Educational, Scientific and Cultural Organizations (UNESCO) in Paris on June 15 to 20.

The meeting is the first in the new field of "information processing" to be held on such a broad international plane, UNESCO has stated. Some 1,500 specialists are expected to attend in an individual capacity.

UNESCO has already begun work in the information-processing field by establishing a center where costly electronic calculating machines, popularly known as "electronic brains," can be used and studied by nations and groups which otherwise could not afford them. This International Computation Center is located in Rome and is operated in cooperation with the Italian Institute of Higher Mathematics.

ELECTRONIC TESTING

A SYSTEM of electronic line testing is described in patent No. 2,868,-899 issued to Edward Schmidt and assigned to General Dynamics Corporation. The system, which uses transistors is designed to work with an electronic switching arrangement. It tests subscribers lines for insulation faults.

The invention consists of a bistable trigger circuit for each of the faults to be detected. An electronic stepping system is used which is composed of a chain of flip-flop circuits which are connected in tandem, and driven by an oscillator.

In use, the trigger circuits are connected so as to test the ring, then the tip for grounds, then to

test for a fault between tip and ring. If a fault is detected under any of these conditions, the bi-stable circuit will transfer to its second state of stability, which will stop the testing procedure and provide an alarm.

The tester will then use a meter to determine the degree of the fault.

PATTERN RECOGNITION

SEEING something and recognizing it are two different things. The photo-electric cell, or "electric eye" sees only light and dark; it can't recognize or distinguish between one object and another. Yet machines are being made which will be able to make such recognition, and more developments are on the way.

The Bell Telephone Laboratories have made a generalized scanner which can be used in studying pattern-recognition systems. In addition to this research tool, the laboratories have also developed a new pattern recognition system. It employs a neuron-field system to transform complex patterns into simple patterns or dots.

The scanner uses a cathode ray tube, flying spot light source. It can scan handwriting as well as various patterns, large or small. The ultimate goal is to feed visual information into machines, without human intervention. The present development works in conjunction with a digital computer.

STANDARD CIRCUITS

MANY of the vacuum tube circuits in use today are common to many different pieces of apparatus. Further, regardless of the application, the design of these circuits remains practically constant. Thirty of these circuits have been collected into a book published by the Superintendent of Documents, Washington 25, D. C. Priced at $1.00, the book is called "Military Standard Electronic Circuits (MIL-STD-439(AER))."

The book shows the basic circuits for such things as a blocking oscillator, a cathode follower, a main gate multivibrator, video amplifier, etc. Along with the circuit diagram are included data on the performance of the design under test conditions.

This sort of book is valuable to the man who finds he can best learn electronics by studying circuits; or to the experimenter who can use such circuits as building blocks to design a custom made device.

PORTABLE METER

A BATTERY operated meter which will measure dc voltage, current and resistance is now being made by the Belleville-Hexem Corp. of Los Gatos, Cal. The new meter uses transistorized circuitry, and will measure from 1 millivolt to 1,000 volts with an input resistance of 101 megohms. Currents as low as 1 millimicroampere can also be measured with this instrument.

Among the uses for the meter are measurement of leakage currents and resistances, vacuum tube grid currents, semi-conductor characteristics, and potential measurement in high resistance circuits.

The Belleville portable meter.

LOUDSPEAKING TELEPHONE

LOUDSPEAKING telephones which have been developed in the past have had the drawback that the installation required the use of a special instrument.

This was sometimes undesirable because the user might require an instrument which incorporates other features, such as pick-up and hold keys. This was not practical in some cases, because the loudspeaking equipment required space on the handset for its own push buttons.

A patent, issued to Edward S. Peterson and assigned to the General Telephone Laboratories provides for a loudspeaking telephone which overcomes these objections.

The invention calls for an apparatus cabinet, which would be mounted out of sight, and connected by cable to the regular subset equipment. In addition, cords would connect to a small loudspeaker unit, and to a control unit.

The latter would contain an on-off switch, a pilot lamp and a microphone. The apparatus cabinet would contain a microphone amplifier and a speaker amplifier as well as a switching relay.

The regular dial on the instrument could be used for either handset or loud speaker operation, and the telephone could be equipped with any of the standard services available for sub-station use.

MICRO-TIPS

IF YOU use switches for anything at all, you'll want to be on the mailing list of an interesting little bulletin called "Micro-Tips." It con-

tains lots of ideas for the use of micro-switches, and also has an idea exchange where readers share their trick circuits with others.

Write to Mike, The Editor, c/o Micro Switch, Freeport, Ill., for a free subscription.

HUMAN COMMUNICATIONS

SOMETIMES it is easy to forget that a telephone conversation involves human beings as well as a collection of electronic wonders. How successful a telephone conversation is depends on what the users think of it. If telephoning is easy, people will do lots of it. If it's difficult, they will use some other means of communication.

The *Lenkurt Demodulator* for February, 1959 outlines some of the requirements from a human point of view. Human speech is more than a bare transmission of essential data. Speech involves inflections, gestures and a wide variety of amplitude and frequency, which would not be necessary for the simple transmission of information.

Also included in the article is an amusing presentation of the effect of noise and crosstalk on telephone circuits.

You can get a copy of the *Demodulator* by writing to Lenkurt Electric Co., San Carlos, Cal.

QUIET, PLEASE!

MAYBE the buzzing of a power transformer never bothered you much, but there are people who are trying to quiet the things down. Westinghouse has been awarded the 1958 Certificate of Award from the National Noise Abatement Council. Westinghouse has been working on the problem of transformer noise for a number of years. Transformers are made today which have a sound level 2 db less than that of seven years ago.

"PRECEDENCE EFFECT"

THE BELL Telephone Laboratories seem to have a knack for turning the shortcomings of the human body into advantages. Their latest stunt takes advantage of what is called the "precedence effect." This means that if a single sound is emitted from two loudspeakers, but is delayed a few milliseconds before it emerges from the second speaker, the ear will hear only the speaker from which it sounded first.

This effect provides a solution for a problem encountered when radio stations try to broadcast stereophonic sound. Normally this is done by setting two microphones before an orchestra, one each to the right and left. Each microphone sends the sound it picks up into separate radio or TV channels, and two stations thus broadcast the sound.

The listener is supposed to set up two radios a few feet apart, so that the sound that goes into each microphone will reach the separate ears of the listener. It's a great idea, but is tough on the guy who only owns one radio set. He hears the output of only one microphone—only half of the instruments in the orchestra. By use of the precedence effect, this can be remedied.

The circuit uses a delay line which cross-connects the right microphone to the left, and another delay line to connect the left microphone to the right.

The stereo listener hears each of his radios separately with the correct placement of sound. He does not hear the response from the cross-connected mike in the wrong receiver, because his ear ignores it.

The fellow with a single radio set hears whatever comes through the microphone on the station he is tuned to, and a fraction of a second later hears the music the other mike is picking up. This is different sound, so he hears it, and cannot detect the delay. As a result he hears everything both mikes pick up.

Bell recently demonstrated this, using the long lines telephone network to patch the hookup together.

RADIO REGISTRY

A NEW Official Registry of Industrial Radio Systems has just been published by Communications Engineering Book Co. of Monterey, Mass.

Compiled from FCC records, the book contains about 40,000 listings of power utility, petroleum and gas pipeline, special industrial, forest products, relay press and motion picture, and VHF maritime radio systems.

The directory is arranged in two parts. The first lists radio systems by class of service, and alphabetically by the company's name. The second section shows call letters by frequency. Included in the information furnished is the number of mobile units and type of equipment used when this information is obtainable.

This directory is one of four issued each year covering mobile radio systems. It is of particular use to telephone companies and others who operate radio systems, because it provides a means of knowing what other systems are operating at nearby locations or on adjacent frequencies. This can be of great advantage in tracking down interference from some other system.

The directory is available from the publisher for $5.00.

NEW STANDARDS

TWO new international standards recommendations affecting vacuum tubes have just been announced by the American Standards Association. The first, IEC Publication 67 (third supplement), contains dimensional information for bases and tubes. The

other, IEC Publication 100, lists recommended methods for the measurement of direct interelectrode capacitances of electronic tubes.

Copies of these standards are sold by the American Standards Association, Department PR 37, 70 E. 45th St., New York 17, N. Y.

RAINFALL vs. MICROWAVE

AS MORE use is being made of the 4 to 6 kilomegacycle common carrier microwave frequency, exploration moves higher into the next band, which is 11 kmc. Each part of the radio spectrum has its troubles and rainfall is the thing that bothers 11 kmc.

Recently Bell Telephone Laboratories conducted year-long tests over an 11 kmc microwave system. The tests were conducted in a region of heavy rainfall, and attentuation was measured at two-mile intervals on paths as long as 27 miles.

The results of these tests and some implications related to systems engineering are described in the January issue of the *Bell System Technical Journal*.

NEWS BY TELEPHONE

THE IDEA of providing unusual services by telephone is being extended. European telephone systems provide a large variety of information services by the dialing of a number which connects to a recorder of some sort. In the United States, time bureau and weather bureau service by telephone have been widely used, and a few other services such as daily prayers are available. In San Francisco, you can dial "L-O-S-T D-O-G" and an SPCA recording will read off the pound man's latest catch.

These services are quite valuable, but they result in a large number of calls being directed to certain numbers, which often ties up the central office equipment. Now the Bell laboratories have devised a new "9A Announcement System" which will handle this kind of traffic.

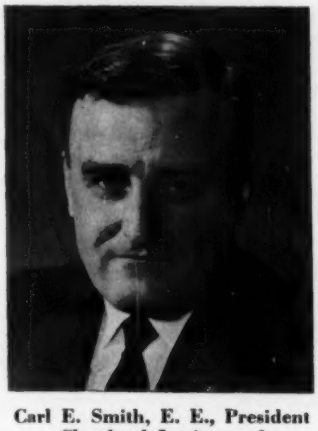
The machine would be installed in the telephone central office, and would have special circuit facilities which would route its calls over paths not ordinarily used for other traffic. The recording could be one of sports or news, and would contain a "commercial" by a sponsoring organization, just as is done with the time service in some localities.

Advertisement

How To Get Your Money's Worth From Electronic Equipment!

THE TELEPHONE industry is rapidly taking advantage of new developments in electronics. This is only natural. Since the telephone first came into existence, telephone men have been quick to recognize the value of new developments.

Thus it is not surprising that the industry is using more and more electronic equipment. Mobile radio is used to connect telephones in cars, trucks and other vehicles. Microwave relay links are used in place of wire and cable in many places. Electronic carrier



Carl E. Smith, E. E., President
Cleveland Institute of
Radio Electronics

circuits and repeaters result in better utilization of existing (and proposed) facilities.

All of these improvements are available today. Tomorrow will see even greater advances. The manufacturers of telephone equipment can be relied upon to give you the kind of equipment you need to fulfill your obligations to your subscribers.

However, you should keep in mind a fundamental principle of management . . . a chain is only as strong as its weakest link. Thus, no matter how big or small you may be, your equipment will not give maximum performance unless it is maintained by competent technicians.

Every company has a technical staff. It may consist of hundreds or perhaps thousands of men . . . or there may be only two or three. These men know and understand telephone technology as it used to be, but in all honesty, do they understand the fundamentals of electronic circuitry?

If they aren't on speaking terms with oscillators . . . rectifiers . . . amplifiers . . . transistors . . . etc., they are not going to be able to give you the technical support you need. A man may be able to wire a central office switchboard in the dark, but if he isn't skilled in the mental tools of electronics, your new equipment will not give you the service you paid for.

In all probability your present staff is very capable. You wouldn't have one which didn't give you the reliability you must have. Therefore they are the logical men to take on the maintenance of electronic equipment . . . as soon as they have received a sound foundation of electronic fundamentals.

This can be done economically and without the loss of valuable man hours by a non-resident training program. Several schools offer this service. They teach your men the fundamentals of electronic circuits. Then, with the ability to understand the principles of any electronic device, your company and the equipment manufacturer have only to conduct a brief orientation of the specialized equipment.

This plan has been used successfully by many companies. It has helped them . . . and it can help you. It will pay you to investigate and get the facts.

For full information on schools providing training in electronic theory and FCC license preparation, write to the National Home Study Council, 1420 New York Avenue, N. W., Washington 5, D. C.

If you would like the details on a "guaranteed" Employers Plan for training technical personnel, write to

THE REGISTRAR
CLEVELAND INSTITUTE OF
RADIO ELECTRONICS
4900 EUCLID AVENUE, DESK TE-31
CLEVELAND 3, OHIO

KEEPING UP WITH the latest developments

By RAY BLAIN

THIS IS the sixth article in a series of seven in which our technical editorial director describes various new items of equipment of interest to telephone companies. The fifth article appeared in the Apr. 18 issue. Readers desiring additional information on any of the products described may write the manufacturers or to TELEPHONY.

* * * *

Flexible Video Pair Cable. (Fig. 98). General Cable offers a new flexible video pair cable primarily designed to terminate the standard video pair cable. Just as the aerial paper-insulated lead-covered telephone cable was brought into a station and terminated by "Tip" cable, the video pair cable is brought into a station and terminated by the flexible video pair cable.

The flexible video pair has been developed with the same characteristic impedance as the video pair in order to prevent a mismatch at the termination, thereby avoiding reflections and assuring maximum signal transfer. Since flexibility is considered of prime importance and long lengths of the flexible video pair cable are not normally required, a smaller conducter size is employed, sacrificing attenuation properties to some extent.

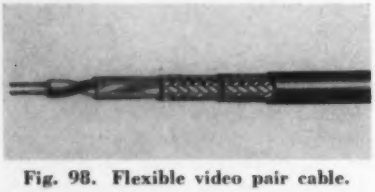


Fig. 98. Flexible video pair cable.

The basic flexible video pair consists of two conductors No. 19 AWG solid annealed uncoated copper insulated with solid polyethylene and color coded for circuit identification Blue and White. The conductors are twisted, and a solid polyethylene belt is extruded over the pair filling the interstices. Over this is applied two silver coated copper shielding braids and a Black Gencaseal jacket. The approximate diameter is .42 of an inch.

The following tabulation lists the electrical characteristics of the flexible video pair cable and, for comparison purposes, standard video pair cable:

ELECTRICAL CHARACTERISTICS

	Flexible Video Pair	*Standard Video Pair*
Dielectric Strength 60 cycle A. C. crest value between conductors for 2 seconds (volts)	5000	2800
Conductor Resistance ohms/mile at 68 F maximum	46	23
Mutual capacitance microfarads/mile nominal	.067	.054
Characteristic Impedance ohms	124 - 3	125.5 - 3.5
Attenuation db/mile nominal		
1 mc/s	12.9	8.6
4 mc/s	25.9	17.1
10 mc/s	41.5	27.5

•

Sequentially Foot-Marked Cable. (Fig. 99). Superior Cable Corp. has perfected a method of permanently and accurately marking wire and cable sheaths every foot in numbered sequence.

This sequential marking system allows users to determine footage available for use at any time. The user will also be able to determine, at any time during construction, how much wire and cable has been used and upon completion easily inventory the amount of wire and cable used on the complete job. These figures can be obtained even though the greatest majority of the wire and cable product is actually in the ground and covered.

Additional advantages can be found in warehousing and stock inventories, as numbers will appear on leading and trailing ends of cable or wire allowing an immediate inventory of the coil, spool, or reel.

It is anticipated that this sequential marking will appear not only on the previously mentioned buried wire and cable to which it is limited at present, but also on all smooth jacketed telephone wire and cable products used in plant construction as well. Preliminary investigations indicate that the incorporation of the sequentially marked products in plant will enable users to save both in product and time of installation.

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Pedestal and Pole-Mounted Buried Cable Terminals. (Fig. 100). These recently designed and tested Superior pole and stake type buried plant terminals are now available for use in the

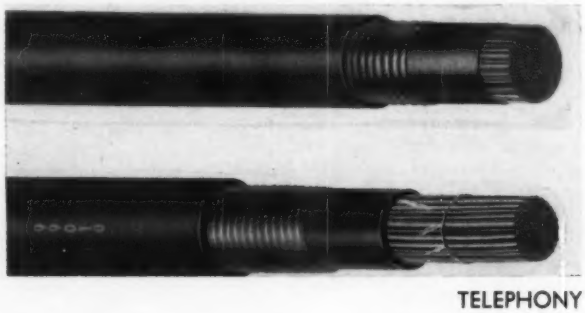


Fig. 99. Sequentially foot-marked cable.

SHERRON STEEL BOOTH MULTIPLES

MULTIPLY PAYSTATION REVENUE AT

PORTLAND'S INTERNATIONAL AIRPORT

CLOSE UP OF MODEL 45-S, TYPE 7DL STAINLESS STEEL DIRECTORY BOOTH IN BAGGAGE LOBBY, SHOWING DIRECTORY SHELF, APERTURE IN CEILING FOR VENTILATING UNIT & PERFORATED LINING

It's a pretty well known fact by now that strategically located phone booths motivate "impulse" calls. When they are Sherron steel booths, their "pull" is especially powerful.

Whether in gleaming stainless steel or in color, Sherron acoustic booths have the trim, clean good looks that folks naturally gravitate to.

And in adequate multiple arrangements allowed by Sherron flexibility, they eliminate the waiting time that all too often turns impulse to impatience.

At the Portland, Oregon, International Airport there are 30 Sherron steel booths and 2 directory units, recessed, semi-recessed and free-standing. In the baggage lobby, there are six recessed booths, directory-equipped, with ample space under the directory shelf for the traveler's luggage.

There's a Sherron booth for every location and budget in either zinc coated, cold rolled or stainless steel.

SEE OUR CATALOG IN SWEET'S — INDEPENDENT — ACOUSTIC & SEE-THRU

SHERRON METALLIC CORP., 1201 FLUSHING AVE., BROOKLYN 37, N.Y.

IN CANADA: W. S. GERRIE & ASSOCIATES, LTD., 66 RACINE ROAD, REXDALE (TORONTO)

Fig. 100. Pedestal and pole-mounted cable terminal.

new outside buried plant concept. These pedestals are available in four sizes which can accommodate wires and cables in a wide range of sizes and types. They are designed for use not only as terminals, but also as splice cases, protecting points, or loading positions. A wide range of combinations of terminating, loading, protecting, and splicing will meet all requirements of the normal buried plant.

The pedestal type terminals are 6 feet long and incorporate in their construction heavy galvanized steel to withstand severe physical and mechanical stresses. Pedestals are galvanized after fabrication which guarantees no raw edges are exposed to weathering or other deteriorating effects. Pole-mounted terminals are similar in design.

Fig. 101. Pole-mounted buried cable terminal.

•

Pole-Mounted Buried Cable Terminal. (Fig. 101). This pole-mounted terminal for buried cable by Utility Products Co., is equipped with a rectangular guard that protects the cable from mechanical injury. This protection extends from below the ground level up and into the cable terminal. The terminal cover also carries a sign indicating a buried cable and a warning that it should not be disturbed.

•

Pedestal-Type Terminal Housings. (Fig. 102 and 102A). This pedestal-type housing is designed to support, protect and provide access to buried wire and cable where the conductor emerges from the ground. It consists of a stake, or post, a ground-line plate and either an upper cover or cylindrical can, as shown in *Fig. 102. Fig. 102A*, shows the method of connecting the cable to the terminal. They are products of Indiana Steel & Wire Co.

Fig. 102. Pedestal type terminal housing.

The stake is a channel section made of heavy No. 10 gauge steel beveled at the bottom to facilitate driving into the ground. The matching ground-line cover plate, which extends from 6 inches below to 6 inches above ground, is readily attached to the stake by a bayonet latch and without the aid of tools.

The one-piece upper cover plate and cap are made of No. 16 gauge steel. The flanges of the cover and cap overlap the sides and top of the stake by approximately one-half inch to insure complete protection.

Fig. 102A. Cable connected to terminal.

The cylindrical cans are made of No. 16 gauge steel. All parts are heavily galvanized by the hot-dip method after fabrication to provide maximum resistance to corrosion. Each model includes a prominent warning sign applied by decalcomania process.

Pedestal-type terminal housings are designed to accommodate 6, 12, 18, 25 or 50-pair buried cable for distribution and loading purposes, looping in and out of the terminal.

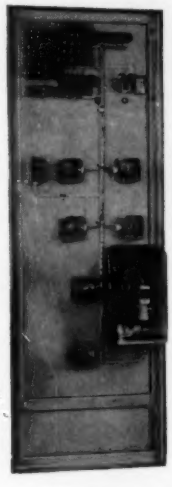
•

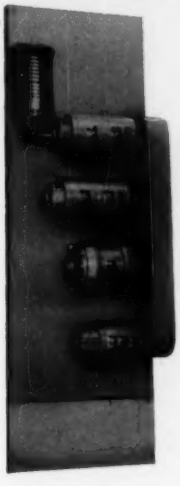
Pedestal Parkway Terminal. (Fig. 103). This new pedestal parkway terminal, by Communications Equipment & Engineering Co., is designed for use on direct-buried wire or plastic cable. It is used on a two-piece pedestal, 6 feet in length. Pole brackets are also available for use in aerial mounting of the cable. The terminal is accessible for testing, cable or wire splicing, cross connecting and for buried wire distribution. The "Bell Jar" type covers are all-steel construction. Loading coils may be installed with a ⅜ of an inch socket wrench. *(Fig. 103 is on page 40.)*

•

Ready-Mount Terminal Assemblies, (Fig. 104). The CEECO Type CP16 non-protected ready mount terminal

ESCO RINGING EQUIPMENT





MEMBER

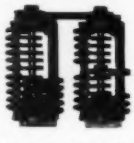
vertical mounting - factory prewiring saves space - simplifies installation

Here are two big points, typical of the practical considerations that go into the design of all Esco ringing equipment.

For new installations, conversions, or expanding present facilities, Esco vertical mounting, plus factory prewiring mean big savings in floor space and installation time and expense. These compact vertical assemblies fit standard rack installations for more efficient station arrangement and neat, modern appearance. Prewiring brings all exterior connections to a single terminal box for convenient connection to power and signal circuits. Color-coded lead identification is used throughout to make inspection or any later wiring changes quick and easy.

Before you make any commitments on new equipment, get the full facts on Esco vertical mounted - factory prewired assemblies. You'll see for yourself why so many equipment engineers and suppliers choose ESCO. Send for free brochure today.

"Ready-to-go" pre-wiring



Compact, accessible interrupters

Combination alternators

Lifetime drive motors

Screw adjusted pile-ups

Permanently aligned drives

ADDITIONAL ESCO FEATURES (details in future ads in this series) explain why ESCO components are included in the installations of prominent suppliers like Automatic Electric Co., Federal Telephone and Radio Corp., Kellogg Switchboard Supply Co., Leich Sales Corp., Stromberg-Carlson Co.

ESCO ELECTRIC SPECIALTY CO.
176 South Street, Stamford, Connecticut

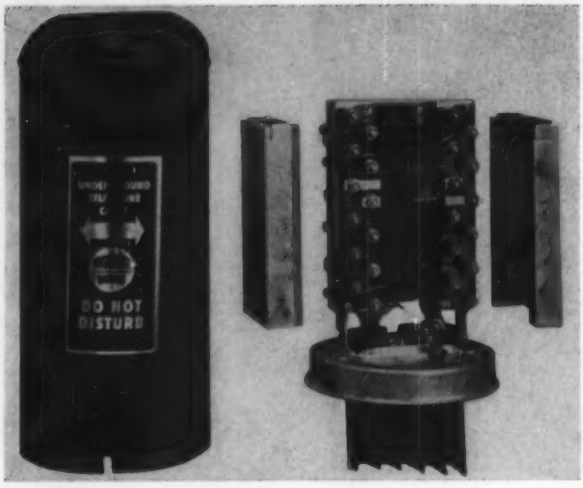


Fig. 103. Pedestal parkway terminal.

assemblies are designed for use with all types of direct-buried wire and cable terminals, CEECO Lug-Three parkway terminals, and all plastic cable splicing terminals. They are also designed for use with type C152 ready-mount load coil assemblies. Available in 1, 2, 6, 12, and 16-pair sizes.

•

Ready-Mount Loading Coil Assemblies. (Fig. 105). The CEECO ready-mount loading coil assemblies may be equipped with either 44 MH or 88 MH coils. The coils are encapsuled in plastic to maintain them moisture-free. The size and weight have been reduced; yet, they maintain the same or better electrical characteristics. Ready-mount straps are available for mounting in splice case or terminals. The coils may also be installed directly in the cable splice. Available with 1 to 26 coils.

Fig. 105. Ready-mount coil assemblies.

•

Ready-Access Cable Terminal. (Fig. 106). The Reliable ready-access cable terminals consist basically of the following major components: base, housing, frame and sheath clamping parts. They may be equipped with one or more binding posts terminal blocks, as required. The base and housing are formulated of neoprene to give maximum service life, good flexibility at low temperatures, and toughness. The frame and sheath clamps are aluminum and stainless steel.

The terminal block has a special plastic shell for high electrical surface insulation with bronze binding posts and No. 24 AWG insulated copper conductor imbedded in the thermal-setting polyester resin. The binding posts are each equipped with two brass washers and one ⅜ of an inch hex brass nut. The neoprene base closes off the bottom of the terminal and provides 24 numbered entry points for drop wire.

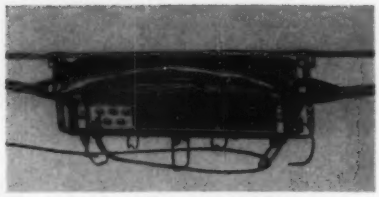


Fig. 106. Ready-mount cable terminal.

•

Cable Splice Case. (Fig. 107 and 107A). The Reliable splice cases and splice case terminals are designed for use with lead, Alpeth, Stalpeth and aluminum sheathed cables. Splice case terminals can be used together to give 12, 17, 22, 27 and 32-pair terminals, unprotected, protected, or partially protected.

These splice cases are manufactured from die cast aluminum and are not recommended for underground or buried installation without special precaution. They are available with baked enamel finishes for highly corrosive areas.

The wiring to the binding posts on the splice case terminals is in accordance with standard color coding. Each binding post has two wires connected; each one extends into the inside of the splice through a separate hole on each end of the case to eliminate piecing out of the line conductors. The splice case is shown in *Fig. 107*, and the splice case terminal in *Fig. 107A*. *(Fig. 107A appears on page 80.)*

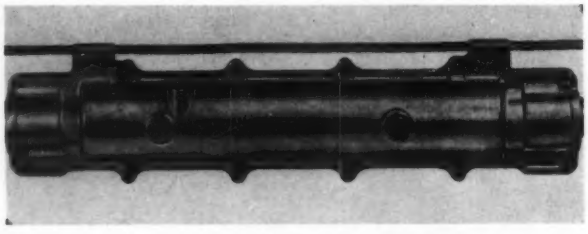


Fig. 107. Cable splice case.

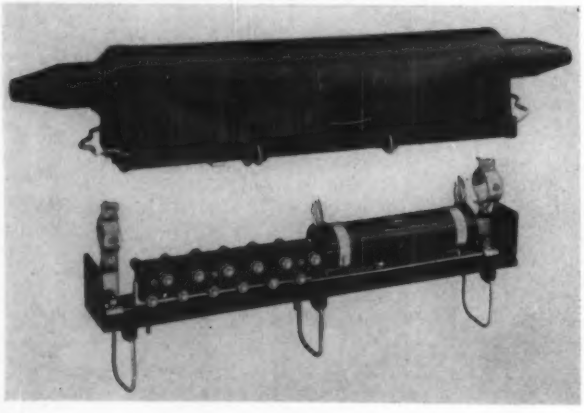


Fig. 104. Ready-mount terminal assemblies.

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"C" Rural Wire Terminal. (Fig. 108). Superior Cable Corp. has recently redesigned its parallel line wire terminal for use with the 14-gauge copper-covered steel parallel extruded line wire. This new parallel line wire terminal still incorporates the many advantages of the former terminal which was used

(Please turn to page 80)

HIGHWAY SKID-MOUNTED

EARTH-BORING MACHINES

. . . dig the hole . . . . set the pole . . . .

Available on full Swing-Base for curb-side digging or Spotter-Base for easy positioning. Write to Highway for complete information.

Spotter-Base for hydraulic positioning in an 80" arc, in-and-out motion of 22".

10 plus features

1. Designed and built rugged and sturdy for tough daily use.
2. Powerfully made to dig holes up to 36" in diameter and 10 feet deep in any soil conditions.
3. Can be quickly mounted on any type or make of truck having sufficient capacity to carry its weight.
4. Can be equipped with integral winch and derrick with a rated capacity of 4500 pounds.
5. Can be quickly adjusted to dig at many angles regardless of position of truck.
6. Auger bar and pole derrick are raised from traveling to working position by power.
7. A complete earth-boring machine, integrally assembled with engine, clutch and transmission.
8. A new adjustable clutch with side ports in the clutch case affording easy access for adjustment.
9. New winch takes power directly from transmission. Utilizes all speeds of transmission.
10. Optional hydraulic controls for easier, faster operation.

HIGHWAY®

UTILITY DIVISION

HIGHWAY TRAILER COMPANY

HEADQUARTERS: EDGERTON, WISCONSIN

Manufacturers of: Public Utility Bodies • Earth-Boring Machines • Pole and Cable Reel Trailers • Winches • Power Take-offs • Service Accessories • Commercial Trailers • Trailerized Tanks and Dry Bulk Haulers

SALES AND SERVICE IN PRINCIPAL CITIES

Complete Advertising Plan at Independents' Fingertips

By DIANNE P. DRUCKER*

NO INDEPENDENT telephone company, large or small, has "to hide its light under a bushel." Available at its fingertips is ready-made local advertising material and material for local tie-in with the national advertising program of the United States Independent Telephone Association (USITA). These materials have been prepared by two advertising agencies that handle the local and national programs.

LIBERTY
IN GOD WE TRUST
EVEN WITH NEW RATES
YOUR TELEPHONE
DOLLAR STILL BUYS
A BIG BARGAIN
As you know, we have just applied for a telephone service rate adjustment that will help us balance revenue with our ever increasing costs.
Our budget, like yours, has been severely strained by rising prices for material, equipment, and personnel. The difference being that our income is limited by regulation.
With a rate adjustment we can attract new investors . . . people like you . . . who want a fair return for their money. And these new investors make it possible for us to give you better telephone service through larger, more modern facilities since our regulated rates do not allow for expansion.
We want nothing unreasonable . . . only enough to keep going and growing, enough to give you ever improved telephone service.
COMPANY IMPRINT

A TAI "rate increase" ad. Eight mats of advertisements prepared by TAI are included in each subscriber package. Mats are in a choice of sizes of one column x 5 inches, two columns x 5 inches, two columns x 8 inches, or three columns x 10 inches.

Local telephone advertising material is available from the Telephone Advertising Institute (TAI), 205 N. La Salle St., Chicago, Ill., which, for the past 15 years, has been working exclusively on Independent telephone company advertising and now serves as agency and consultant to more than 1,000 exchanges. According to its founder, Nathan E. Jacobs, the institute has prepared more telephone ads for publication than any other agency.

The USITA national advertising program is administered by the J. M. Mathes Co., Inc., 260 Madison Ave., New York 16, N. Y.

Why do telephone companies need local and national advertising? They enjoy the status of being without competition; therefore, since they don't have to beat their drums louder to drown out the competition's noise, why do they have to make any sound at all?

To illustrate a telephone company's need for advertising, C. C. Pearce, manager of the Farmers Telephone Co. of Riceville, Ia., and chairman of the USITA Advertising Committee, gives this allegory:

"It seems there were once two telephone company managers. One, Elias Nathan of the Hawthorne Telephone Co. was convinced that everyone knew about telephone service and the telephone facilities available. He never advertised because he felt there was nothing about which he could inform the public.

"With this attitude, income from plant and equipment for the Hawthorne company remained status quo. When Elias needed money for improvement and expansion, his old revenues, even with a rate increase, just weren't enough. He couldn't attract outside investors either. Therefore, his facilities steadily deteriorated or, at best, were on a piece-meal basis.

"On the other hand, there was Joseph Alan, manager of the Cedar Telephone Co. with less than 500 telephones. Mr. Alan's every managerial action was based on the assumption that his subscribers knew nothing about his company or his facilities. He told them about the romance of telephone service, the fashionableness of color telephones, the convenience of extension telephones, and the speed of long distance service. He did this with every means at his disposal—advertising, displays, bill inserts, billing envelopes, etc.

"His subscribers listened and were impressed. They ordered extra revenue-producing services. And because he had told them through his advertising and public relations effort all about the company, they helped him get a rate increase approved more easily since he was offering up-to-date service and facilities. And, local people wanted to invest in the future of such a dynamic and sound company.

"Joseph Alan believed, and rightly, that subscribers and the public, 'must be told, then sold.'

"How could a telephone company with limited resources afford to conduct this kind of campaign? It was easily done through the services of the Telephone Advertising Institute."

The cost of an institute subscription

(Please turn to page 46)

*Miss Drucker is Associate Editor of TELEPHONY.

A one-column-by-5-inch TAI ad featuring a color extension telephone as a Christmas gift.

ECONOMY MINDED?

Telephone companies from Maine to the Hawaiian Islands are realizing savings by using light-weight vehicles for certain types of maintenance, cable splicing and light installation; heavy truck equipment does not prove economical for this kind of work.

HARPER-BAKER combine

THROUGH the combined efforts of Harper Motors, Inc. and the Baker Equipment Engineering Company of Richmond, Va., the Volkswagen light-installation truck, pictured herewith has been developed.

The maximum load weight of the Volkswagen pickup is 4,079 pounds; the net weight of the pickup is 2,094 pounds, and the weight of the special body with the equipment is 586 pounds. This leaves a pay load of 1,399 pounds, which is 600 to 700 pounds more than the average pay load that an average telephone company will carry on its trucks for this type of work.

The special Volkswagen body may be equipped with a bit rack for assorted drill bits, tree trimmer and tree pruning saw rack, ladder rack for 6-foot step ladder, tree trimmer rack for 6-foot sections, and overhead bows and ladder rack.

Savings are substantial from the use of this type of transportation equipment—in original cost and in up-keep (gasoline, oil and tires cost about half). Write today for full details.

HARPER MOTORS, INC.

PRESTON AVENUE AND NINTH ST. CHARLOTTESVILLE, VIRGINIA

TELEPHONE 2-8191

when your
branch exchange
subscriber
requires toll restriction,
remember...

only AE toll restrictors give you

these 4 features:

1

CAN BE USED WITH YOUR CENTRAL OFFICE BATTERY FEED!

Regardless of P-A-B-X size, AE Toll Restrictors can be used with central office battery feed—don't require separate, costlier local battery feed. Also, AE Toll Restrictors can be used with any 48 volt P-A-B-X.

2

NO MODIFICATION OF P-A-B-X TRUNKS NECESSARY!

AE Toll Restrictors never require rewiring of central office trunk circuits. You save time. labor and money.

3

CAN NEVER BE FOOLED BY FALSE DIGITS!

AE Toll Restrictors cannot be unlocked by dialing a "good" digit right after the "9". They do not respond to dialed digits until after central-office dial tone comes back over the trunk.

4

THREE TYPES OF OPERATION!

- ABC, Toll and SATT code restriction for use in Metropolitan areas.
- Toll and SATT code restriction in offices using 2-5 digit-absorbing selectors.
- Toll and SATT code restriction in offices not using digit-absorbing 1st selectors.

With AE Toll Restrictors, your P-B-X and P-A-B-X customers can restrict unauthorized persons from making toll calls. For complete information about AE Toll Restrictors, write: Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.

AUTOMATIC ELECTRIC

Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

is so low that, in many cases, the addition of one new subscriber will pay for every cent of a company's participation.

The need of telephone companies, with their limited budgets, for a source of low-cost advertising material was apparent for many years. Collective action was necessary to enable every company, no matter how small, to have these materials for its own local use at a nominal cost.

Institute Formed in 1944

On Mar. 2, 1944, the USITA Advertising Committee, which was appointed by C. F. Mason, who at that time was president of the national association, met under its chairman, the late R. A. Phillips, to discuss making available an advertising and public relations service to all companies at a low cost.

The war was still in progress but men of vision in the telephone operating field saw that the wartime held order situation would not last forever.

As Chairman Phillips pointed out, "While it is necessary today to explain shortages, it is entirely possible that tomorrow we will be selling more service, or perhaps justifying upward revisions in our rates."

The committee interviewed several advertising agencies and from them chose Bozell & Jacobs, Inc. of Chicago, an agency experienced in the utility advertising field, to handle the advertising project. The committee also recommended the establishment of the Telephone Advertising Institute, as the organization to distribute the advertising and promotional material.

On Apr. 19, 1944 the USITA's board of directors unanimously approved the advertising committee's report recommending that the institute be set up.

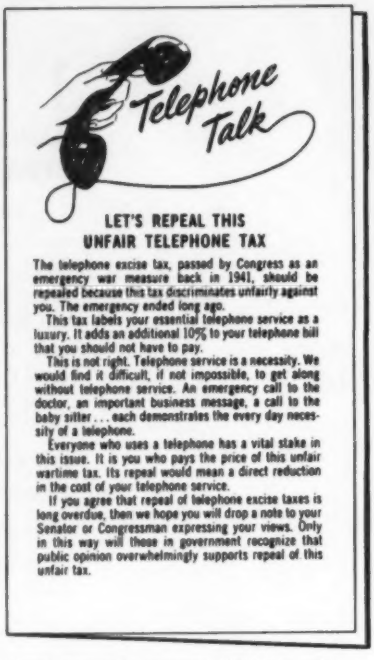
By September, 1944, 50 exchanges in 38 states were subscribers. Within one year the institute was serving 770 exchanges.

From its inception, the institute has been directed by the USITA Advertising Committee which is one of the reasons why all the material prepared is geared to the Independent industry's over-all current viewpoints and requirements.

Committee Meets with TAI

Three times yearly the USITA committee has met with TAI officials in Chicago and newspaper advertisements and other material have been approved by the committee. New trends in the industry and predominant forces are discussed in an effort to keep advertising and publicity up-to-date.

The Telephone Advertising Institute supplies its subscribers with six packages yearly. The packages, which are


Telephone Talk

LET'S REPEAL THIS UNFAIR TELEPHONE TAX

The telephone excise tax, passed by Congress as an emergency war measure back in 1941, should be repealed because this tax discriminates unfairly against you. The emergency ended long ago.

This tax labels your essential telephone service as a luxury. It adds an additional 10% to your telephone bill that you should not have to pay.

This is not right. Telephone service is a necessity. We would find it difficult, if not impossible, to get along without telephone service. An emergency call to the doctor, an important business message, a call to the baby sitter . . . each demonstrates the every day necessity of a telephone.

Everyone who uses a telephone has a vital stake in this issue. It is you who pays the price of this unfair wartime tax. Its repeal would mean a direct reduction in the cost of your telephone service.

If you agree that repeal of telephone excise taxes is long overdue, then we hope you will drop a note to your Senator or Congressman expressing your views. Only in this way will those in government recognize that public opinion overwhelmingly supports repeal of this unfair tax.

First page of a recent TAI bill enclosure which discusses the need for the repeal of the federal telephone excise tax. A copy of a bill enclosure is included in each TAI package. They may be ordered at a low cost.

mailed the first of January, March, May, July, September, and November, contain materials to be used for the following two months. For example, the January mailing reaches the subscriber between the fifth and 15th of the month and is scheduled to be used in February and March.

A standard TAI subscriber package contains eight advertising mats to be used for local newspaper advertising. These mats give the company a weekly series of ads for the next two months. The mats are available in a choice of sizes of 1 column x 5 inches, 2 columns x 5 inches, 2 columns x 8 inches, or 3 columns x 10 inches.

The package also contains two colorful posters, 14 x 22 inches, which can be displayed in the telephone company office and can be changed every month.

Two booth and two counter cards, 7 x 10½ inches, are also included in the package. These, too, are changed monthly.

Contains News Releases

The package also contains four news stories written so that they can be localized for the individual company. Four radio spot announcements handled in the same way are also included; these radio announcements may be adapted for supplemental newspaper advertising copy in case a company does not have a radio station in the area.

As an added bonus, the institute package contains the *Telephone Advertising Digest*, a clearing house of ideas on and suggestions for using advertising.

The institute makes periodic surveys to find out just what member companies want to see spotlighted in ads and advertising aids.

For example, on a recent survey, the institute found that subscribers wanted to emphasize the value of extension telephones. So, an ad was offered appealing to farmers, saying, "In terms

(Please turn to page 50)

This is a TAI booth and/or counter card (7 x 10½ inches). Two booth and two counter cards are included in each TAI package.

SAVE "COPPER DOLLARS"...PLUG IN HALLAMORE E-REPEATERS

Hallamore field engineers, working with telephone company engineers and engineering consultants, have discovered how to save your company "copper dollars," when building new outside plant or when bringing about transmission improvement on existing facilities. Using Hallamore produced, negative impedance E-Repeater equipment, field-proven as most economical and trouble-free, they plug in versatile amplifying power, instead of hanging—or burying—costly copper cable. 15 circuits or 1500, there are important economies in the application of Hallamore E-Repeaters and allied equipment. A qualified Hallamore engineer will be pleased to consult with you, or we will send detailed descriptive material at your request. *Note...Immediate delivery is available.* Hallamore Electronics Company, Telephone Dept., 714 Brookhurst St., Anaheim, Calif. • A Division of The Siegler Corporation.

Designed by Gravelle

HALLAMORE

Economics of E-Repeater Installation Told by Hallamore Transmission Engineers

TELEPHONE COMPANY engineers and engineering consultants are finding important savings for their companies and clients, while maintaining, or increasing efficiency of operation, with the application of E-type repeaters.

As an example; installed costs per circuit mile of cable are estimated as follows: 24H88—$78.00; 22H88—$90.00; 19H88—$114.00. And two recent E-Repeater installations presented the following picture (including repeaters and all associated equipment, such as mounting shelves, power distribution panels, and 130 volt power supplies): 100 E2 Repeaters—$110.77 per circuit; 54 E2 and E3 Repeaters—$226.35 per circuit (one E2 and one E3 Repeater were used on each of these circuits to obtain high gain).

With the obvious difference of $24 per circuit-mile between 19 and 22 gauge cable and $28 per circuit-mile between 22 and 24 gauge cable, it takes very little distance to "prove in" E-Repeaters.

Use of finer gauge wire makes possible placement of cable carrying many more pairs, with resultant underground duct and pole line savings. An additional sizeable capital saving is realized because of the fact that all the repeaters are not required with the initial cable installation. Repeaters are purchased only as necessary to accommodate circuits actually in use.

When changing the wire center for an area, it is not necessary to replace existing copper to obtain transmission improvement. Leave in the old fine gauge plant—just add repeaters as required.

There are more E-Repeaters in operation today than those of any other design. They are still the most stable and uniformly reliable negative impedance repeaters on the market—yet the best costs no more.

For the BEST POLE LINE—*specify*

HUBBARD HARDWARE

from arm to anchor!

When it comes to pole line hardware . . . look to Hubbard for all your needs. From this one source . . . the world's largest manufacturer of pole line hardware . . . you get thoroughly dependable products wherever you are.

Continuous research by Hubbard Engineers . . . responsible for the high standards of quality and design of Hubbard Hardware . . . has now been greatly accelerated by the unexcelled facilities of the new Hubbard Electrical Research Laboratory—to bring you the finest pole line hardware in the industry.

Next time you need pole line hardware, call your Hubbard Distributor. There is one near you.

GUY HOOK

STRAIN PLATE

GUY CLAMP

SERVISLEEV

GUY PROTECTOR

STEELWING ANCHOR

The items illustrated are available in a full range of sizes.

HUBBARD

AND COMPANY · 200 SOUTH MICHIGAN AVENUE · CHICAGO 4, ILLINOIS

EVERY 2 FEET

NUMBERS LIKE THIS

are permanently stamped, in sequence, on

SUPERIOR WIRE and CABLE

TO GUARANTEE THE FOOTAGE
YOU GET AND LET YOU

ACCURATELY MEASURE

- **THE FOOTAGE YOU NEED**
- **THE FOOTAGE YOU USE**
- **THE FOOTAGE IN STOCK**

Save time, save money, save cable . . . order Superior Cable with sequential measurement marking on the jacket.

Available on all Superior Cables meeting requirements of REA PE23 and PE24.

Write for further details

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

3468

of time, what the telephone saves the farmer ain't hay."

Subscribers wanted color promotion so a TAI ad showed two ladies over the back fence remarking, "Have you seen Joan's new color telephone—it's lovely." Another had a drawing of beautiful hands holding a telephone with a headline saying "Brings fashion to your home."

Use of long distance was another item companies wanted stressed, so one ad said "By calling station-to-station, I can call home every week." On the same theme a headline read "Have you called home this month? Telephone tonight and surprise the folks." Over a drawing of a dollar with a third taken out of it, a line informed readers that "You save one-third by calling long distance station to station."

Value of Service Ads

Sixty-one per cent of those answering the TAI survey wanted to attract new subscribers. TAI prepared several ads slanted to show the value of telephone service.

Forty-one per cent of returned questionnaires said that paystation promotion was needed. The TAI showed a man whose car had just broken down calling a garage from a paystation with the headline, "Calls that count."

Sixty-seven per cent wanted ads to promote the use of the classified advertising section of the telephone directory. A TAI poster showed a whole family together looking through a classified section and the reader was informed that "Golf, galoshes, garden equipment, are all listed in the classified pages." A suggested news story and other material on this subject were also prepared.

Some institute ads and posters are geared to promote the use of the telephone on holidays, especially Christmas, New Year's, Valentine's Day, Mother's Day and Father's Day.

Another subject featured is the proper use of party lines. For example, in one ad, a teenager is cautioned, "Remember, dear, our party line neighbors may want to use the line too."

TAI surveys have revealed that 39 per cent of those companies answering questionnaires use radio advertising, 69 per cent submit releases to newspapers, 57 per cent provide bill inserts and 65 per cent read the *Digest* regularly and think it is helpful.

Tells How to Use Material

The *Digest* provides the guidance and counsel of professional advertising and public relations people to institute subscribers directing them exactly how to use the materials provided and giving them new merchandising ideas.

It is a clearing house of information telling companies how to sell their services and schedule their advertising. Many of its articles are of the how-to-do-it type including how (1) to use newspaper advertising, (2) to use radio advertising, (3) to get the most out of classified advertising revenue, (4) to use the seasons to promote long distance service and to sell other services, (5) to tell the company's story at state and county fairs, (6) to tell subscribers the company's tax story, and (7) to increase toll business.

Other features deal with success stories of various telephone companies. Also, the *Digest* is used to illustrate the latest additional material offered by the institute.

The Telephone Advertising Institute's regular package is available to subscribers at the following rate schedule:

Size of Exchange	*Price per Month*
1 to 499 telephones	$ 3.00
500 to 999 telephones	3.25
1,000 to 1,499 telephones	3.75
1,500 to 2,499 telephones	4.75
2,500 to 4,999 telephones	6.00
5,000 to 9,999 telephones	11.00
Over 10,000 telephones	22.00

Companies with one or more exchanges, none of which have more than 500 stations, may subscribe to the *Telephone Advertising Digest* at $3.00 per year and be entitled to buy material offered by the institute at quoted prices.

Additional copies of TAI advertising mats, both recent and past, are available to subscribers at the following prices:

50c	1 col. x 5 inches
60c	2 col. x 5 inches
75c	2 col. x 8 inches
$1.00	3 col. x 10 inches

Artwork and Local Copy

If a company finds that the institute's advertising copy doesn't fit the company's local situation, it is easy to cut away the copy and use the mat's illustration along with original copy. The company thus saves the cost of artwork. And, this is a considerable saving. Just to buy the artwork for one newspaper ad would be much greater than the amount of a small company's yearly subscription fee to the institute, it has been pointed out. A company also is able to accumulate a backlog

(Please turn to page 82)

TAI poster (14 x 22 inches) featuring color telephones. Two posters are included in each of the six TAI packages.

SUTTLE SUPPLY LINES

SUTTLE—Suppliers of Equipment to Telephone Men—Since 1910

FOR CABLE RELIEF, TEMPORARY SERVICE

Fast, low cost construction is possible with **ANSONIA** Lightweight Rural Distribution Wire. Has plastic-insulated #19 or #22 A.W.G. soft copper conductors in color-coded pairs cabled around a polyethylene-insulated .109 high-strength galvanized steel support wire. Each conductor pair has a controlled different length twist to avoid crosstalk. Breaking strength of 1800 pounds makes it ideal for temporary service or cable relief. Check **SUTTLE's** quote on your needs.

WIRE FASTENERS FROM M. M. RHODES

M. M. Rhodes & Sons, manufacturers of nail specialties, have continually been *first* in developing new products to meet the ever-changing requirements for wire fasteners occasioned by the introduction of new types of wire and cable. Insulated nails and staples, inside wiring cable clamps and clasps manufactured by this 88-year-old firm are stocked in quantity by **SUTTLE** and can be shipped to you quickly in quantity—Just call Lawrenceville, Ill., 782.

DIAMOND WIRE QUICKLY AVAILABLE

For connecting open wires together or to cable terminals, **DIAMOND WIRE** offers its neoprene covered Bridle Wire. This rubber insulated, soft tinned copper wire offers exceptional strength and holding power. The neoprene insulation is *permanently* welded to the conductor. All types of **DIAMOND** Telephone Wire are stocked by **SUTTLE** in quantity and usually can be delivered immediately. Check **SUTTLE's** prices *before* you buy!

LOW COST SOURCE OF NEW REVENUES

Use surveys prove that **SUTTLE** Drive-Up Booths are the most profitable outdoor telephone pay stations yet devised. Motorists phone from their cars and coin boxes jingle with increased revenues. A complete line of accessories—lights, signs, roadside indicators—stimulate use of these "Phone From-Your-Car" booths. Call or write **SUTTLE** for literature and prices on these low cost money-makers. ($99.50 ea.)

COOK TERMINAL FOR PLASTIC CABLE

Designed and made by **COOK ELECTRIC,** the PLX Cable Terminal is for use on plastic cable which is looped *through* the terminal without cutting the wires and the desired pairs are terminated for distribution. Also used for junctioning and terminating cable. Supplied with or without Minigap or Mytigap arresters mounted in an arrester plate; specify whether or not protection is needed in your order to **SUTTLE.**

EVERYTHING IN TELEPHONE PRINTING

SUTTLE has the experience and the equipment to give you the finest quality Independent Telephone Company forms and directories at a price which is right. Everything you need—from directories to standard toll tickets—you can get on one order form when you order from **SUTTLE.** Check our low prices on standard forms. For real savings, let us quote you on your directories. Printers to Telephone Men —*Since 1910.*

Manufacturers, suppliers, and printers to Telephone Men — Since 1910

For further information, specifications or quotations on these telephone supplies—write, wire or telephone—

SUTTLE EQUIPMENT CORPORATION

401 North 15th St., Lawrenceville, Illinois
Phone: Lawrenceville 782

135 S. La Salle St., Chicago 3, Illinois
Phone: DEarborn 2-3108

Complete Cable System Pressurizing

By D. E. ZIMMERMAN*

Fig. 1. Pressure gun being used to plug a cable.

THE MAINTAINING of communication cables under pressure is, of course, not new to the telephone industry. For many years, nitrogen gas has been used in pressure work. This gas is chemically inert and, as used for pressurizing purposes, is extremely dry. Generally speaking, nitrogen gas has done an excellent job in pressure work; however, because of the inherent feature of high cost, its application has historically been limited to toll and trunk cables. The cost factor, along with other reasons, has in effect "ruled out" wide usage of nitrogen gas on "exchange" or "subscriber" cable plant.

The telephone industry, however, has long appreciated the desirability of placing complete cable systems under pressure, and with the availability of pressurizing equipment such as the refrigerant type compressor air dryers, complete cable system pressurization is now quite practicable and economical.

The principle of refrigeration air drying is quite simple. Room air is compressed and delivered to an air storage tank where it is cooled to a temperature just above 32° Fahrenheit. As a result of the compression and cooling, approximately 75 per cent of the air moisture is removed. An additional moisture reduction is accomplished during the expansion of the air from the high pressure in the storage tank to that maintained in the cable. In view of the unlimited supply when air is used as the pressure medium and the extremely low operating and "first" costs characteristic of refrigerant type air dryers, it can readily be seen why we can now think in terms of complete cable system pressurization.

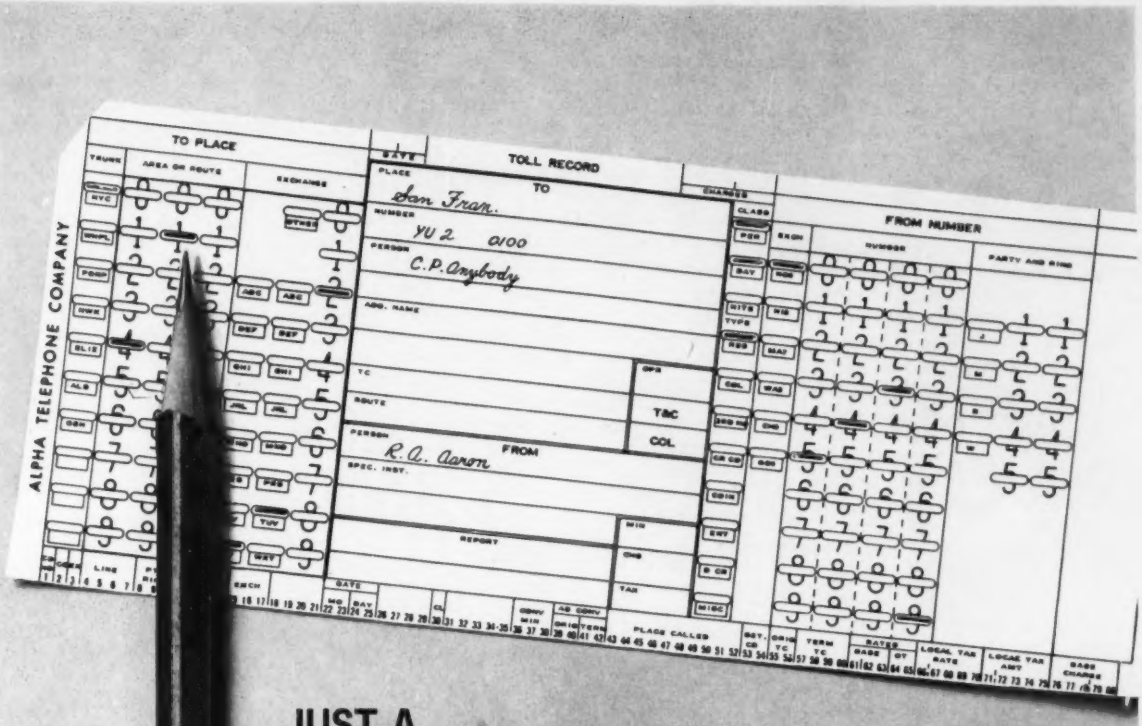
In view of the numerous publications available which very adequately cover the basic principles and design considerations of "pressure testing," it is not intended that this article deal with the involved fundamentals. However, it is a necessity that anyone investigating or planning a pressure system adequately familiarize himself with such subjects as air and gas flow in cables, correction of pressure measurement, construction tests, pressure testing plugs, operation of pressure contactors, etc.

It is the intent of this article to point out certain considerations and features which are characteristic of continuous flow pressure systems as applied to an entire cable plant. As such, these considerations and features differ somewhat from those gained through experience with gas systems as they have historically been applied to primarily toll and trunk cables. The major difference is that "gas tight" cable plant is not necessary, and we can go so far as to say that "gas tight" cable plant is not even desirable when air drying equipment is used as the source of supply.

This approach is based on the fact that practically an unlimited supply of "gas" is available through the use of air drying equipment and that it is uneconomical to attempt to close the many small sheath openings which exist in any complete cable plant. The unlimited supply of "dry air" permits ignoring many of the small leaks, since the escape of air through the small openings will minimize the possibility of moisture entering the cable. This same principle applies when major sheath damage is experienced, in that the escaping air will decrease the extent of moisture damage to the cable core. In other words, the involved cable plant need only be "gas tight" to the extent that the leakage will not exceed the output capacity of the air drying equipment, and this capacity can be in the order of thousands of cubic feet of dry air per day.

For example, one corporation manufactures a unit which can supply up to

*Mr. Zimmerman is General Plant Manager of General Telephone Co. of Pennsylvania, Erie, Pa.



JUST A FEW PENCIL MARKS AND EACH TOLL CALL IS READY FOR AUTOMATIC BILLING

from call to bill—automatic toll charge processing is now within the reach of every independent telephone company

Just a few marks on an IBM Mark Sensed Toll Ticket, and your operator records all data pertinent to a toll call in a form ready for machine processing. **No further manual transcribing is needed!**

Through processing by IBM equipment, the pencil marks are converted to punched holes. Calls are automatically rated, amounts extended, and bills prepared.

In addition, statistics for traffic study and control, settlement reports, and toll studies are available as a by-product.

To find out how your company can benefit from this IBM Data Processing system, on a purchase or lease basis, call your local IBM representative today.

IBM®
DATA PROCESSING

7,000 cubic feet of dry air per day. As long as the capacity of the equipment is not exceeded, the involved cable plant can be placed under pressure and the larger sheath openings closed on a programmed basis as rapidly as available forces and funds permit. And, in the meantime, a major step would be taken in the direction of the two basic objectives of complete cable plant pressurization and these two objectives being, of course, decreased maintenance costs and improved customer service.

The first step in laying out a pressure system is to prepare a line schematic of the involved cable plant showing the size, gauge, and length of each cable along with all branch or junction points. This schematic should also include such information as location of non-gas tight terminals, cross-connect terminals, known gas plugs, plug and by-pass terminals, valves, house cables, and lead and textile "tip" cables.

With this information available, the initial steps required to pressurize can be taken. A sequence of importance could be considered as: (1) Plugging all "tip" cables, (2) plugging all cross-connect terminals, (3) by-passing or removing known plugs, (4) plugging house cable branches, (5) plugging non-gas tight terminals, and (6) plugging at junctions of plastic conductor insulated and paper or pulp conductor insulated cables.

In reviewing these plugging requirements, it is interesting to note that, in the past, plugging, or "damming" as it is sometimes referred to, was a relatively expensive operation in that it involved sheath removal along with a subsequent enclosure in addition to rather complicated usage of paraffin, asphalt, or similar plugging material. A relatively new tool which greatly decreases both the cost and time required to plug a cable or terminal stud is the cold resin pressure gun.

With this gun, it is possible to merely insert a standard pressure valve in the cable or stub to be plugged, apply the gun to the valve, and inject a cold resin material into the cable. A very satisfactory plug is obtained at a fraction of the cost required when the paraffin or asphalt methods are used. *Fig. 1* shows the pressure gun being used to plug a cable. In the case of larger cables, such as those found in a cable vault at the "tip" cable junction, it has been found that a very economical plug can be obtained by installing several pressure valves around the sheath and then applying the pressure gun to each of the valves.

Another item of interest in regard to plugging is that companies using strand mounted terminals will, in all probability, find that these terminals are "gas tight" and will require no additional plugging measures. In any event, the cold resin pressure gun can play a very important role in the placing of a given cable system under pressure.

In the design and layout of a continuous flow pressure system for a complete cable plant, the length of a "gas section" should be ignored. Gas sections in this type of pressure system should include all main and branch cables served from a single sheath originating at the central office. The objective, then, is to obtain approximately two pounds of air at the end of each branch cable in the pressure system. Due to the many small scattered leaks, the normal gradient for the cables will slope downward from the pressure feed point. The critical locations will be at the end points of the cables. The two-pound minimum figure is based on the "breathing" characteristic of aerial cable. It has been found that rapid temperature changes will produce pressures inside the cable that differ by as much as 1.5 to 2.0 pounds from the outside atmospheric pressure. The maintaining of two pounds of air will prevent this so called "breathing" action.

For a continuous flow pressure system, valve spacing will be dictated by need rather than on the basis of any standard spacing. Valves will, of course, have to be installed at all cable ends in order to determine whether or not the two pounds of air is being obtained. Additional valves should be placed only as part of the efforts to obtain the two pounds of air or for leak location purposes at a later date. It is generally considered unnecessary and uneconomical to install contactors in such pressure systems except in the case of toll or possibly trunk cables. By-pass facilities will have to be provided at all locations such as at known plugs that cannot, from a practical or cost standpoint, be removed.

The method of metering and the metering panel arrangement is of the utmost importance to the achievement of a good pressure system. The basic components of a metering panel are the

(Please turn to page 101)

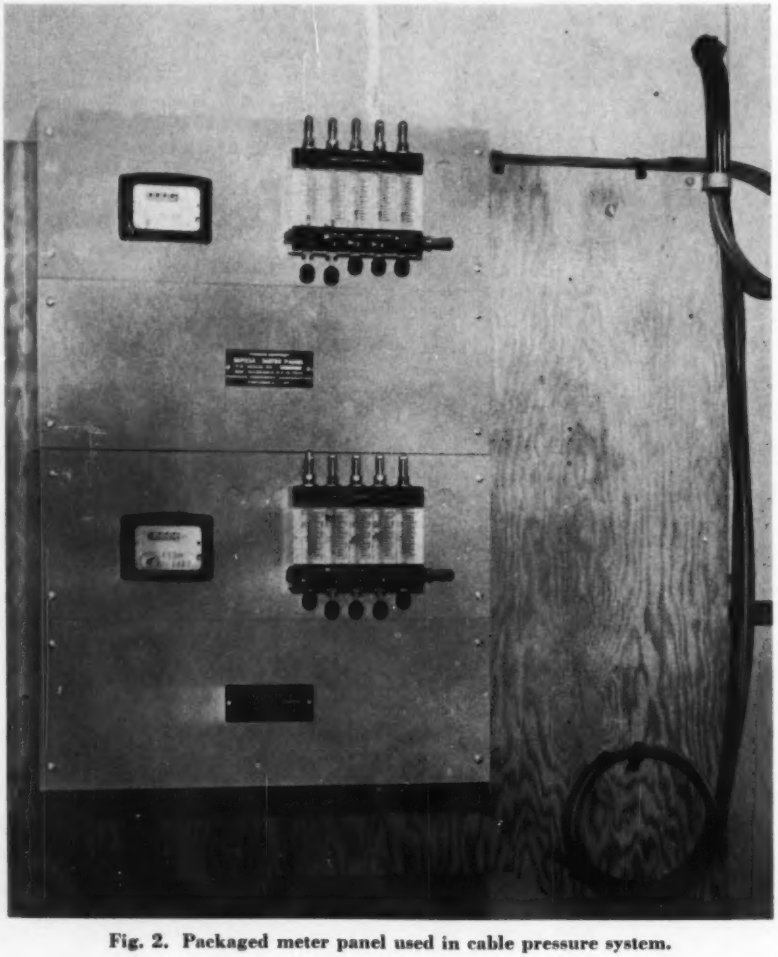
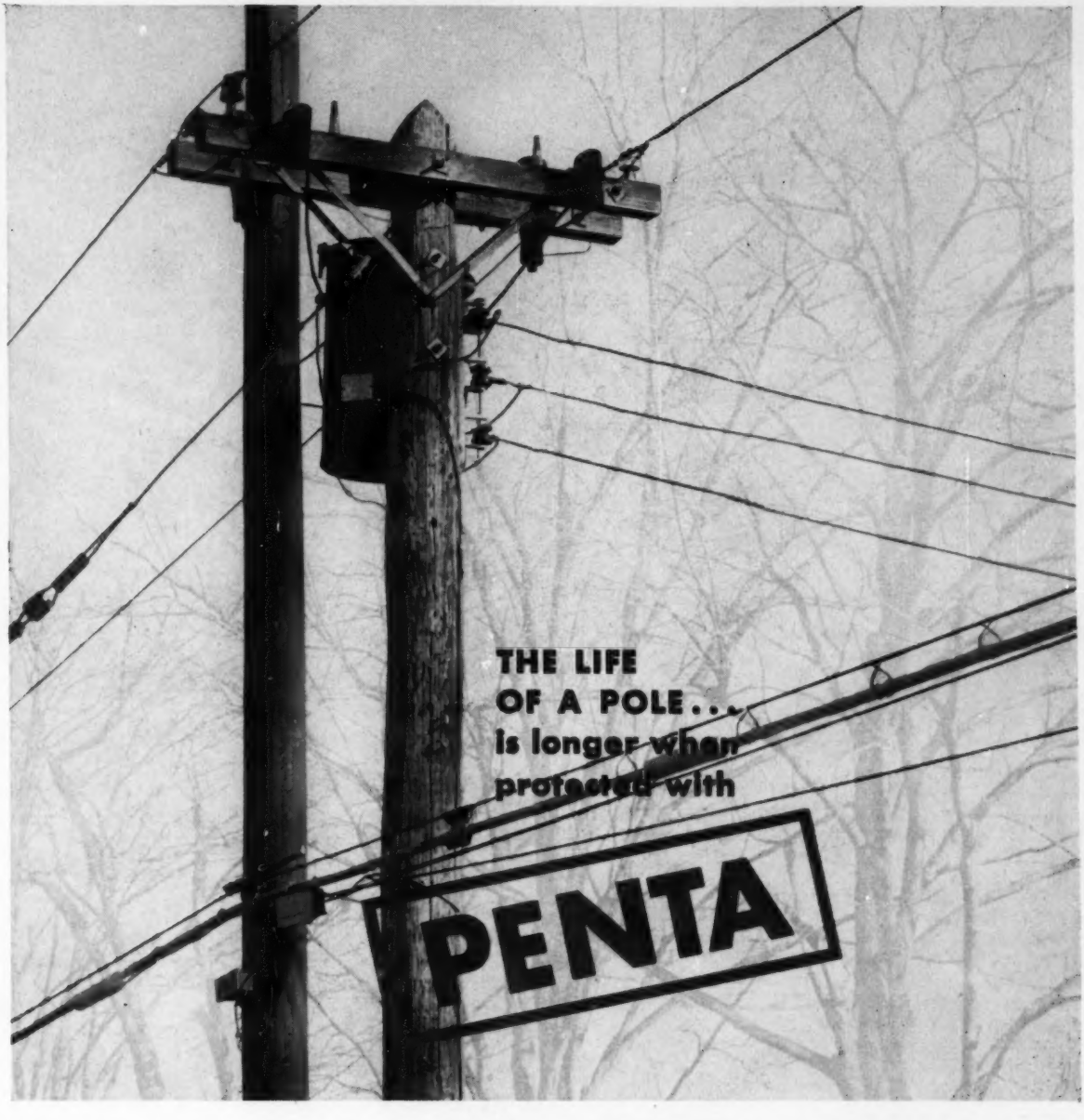


Fig. 2. Packaged meter panel used in cable pressure system.



Today, more and more men with maintenance on their minds will tell you . . . it's good business to protect lumber with PENTA treatment. Here's why:

1. Costs no more — Service records show PENTA treatment gives poles, cross ties and other lumber for exposed structure extra long life. Yet PENTA treatment costs no more than ordinary preservatives.

2. Won't leach out — Because PENTA is an oil-borne rather than water-soluble preservative, it doesn't leach out, leaving wood vulnerable to rot and termites.

3. Clean to handle — Construction and maintenance supervisors know that workmen handle clean wood faster, more efficiently — and with fewer kicks!

Reichhold is a major supplier of PENTA to the wood industry and to wood users. If you haven't done so yet, investigate this modern method of protecting your lumber investments — write for the name of your nearest Reichhold distributor of PENTA.

REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride
Maleic Anhydride • Sebacic Acid • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate
Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N. Y.

Creative Chemistry . . . . . Your Partner in Progress

RCI

Prepare for

DISTANT DIALING

with

UNIVERSAL

COMPUTER INTERCEPT

DIGIT ABSORBERS

TRUNK DIGIT REGISTERS

RINGING CONVERTERS

OUR EQUIPMENT

IS SOLD THRU ALL

LEADING TELEPHONE

DISTRIBUTORS

• • •

For full particulars contact

the nearest office of your

Distributor or —

TELEPHONE DIVISION

UNIVERSAL

CONTROLS CORPORATION

OFFICE AND PLANT-CARROLLTON, TEXAS

MAIL ADDRESS-P. O. BOX 13122, DALLAS 20, TEXAS

Telephones: Carrollton 3885 — Dallas CH 7-3123

UNIVERSAL

EQUIPMENT

NOW IN SERVICE OR ON ORDER

ALEXANDRIA TELEPHONE COMPANY
Nelson, Minnesota
BOONE COUNTY TELEPHONE COMPANY
Bellefonte, Arkansas
BURNET TELEPHONE COMPANY, INC.
Buchanan Dam, Texas
CENTRAL ARKANSAS TELEPHONE COOPERATIVE INC.
Bismarck, Arkansas
Donaldson, Arkansas
CHURCHILL COUNTY TELEPHONE AND TELEGRAPH SYSTEM
Fallon, Nevada
CITIZENS UTILITIES COMPANY OF CALIFORNIA
Janesville, California
DE LEON TELEPHONE CO., INC.
Carbon, Texas
DELTA TELEPHONE AND TELEGRAPH COMPANY
Courtland, California
(Toll Center Intercept serving 4 exchanges)
DORRIS TELEPHONE COMPANY
Macdoel, California
EGYPTIAN TELEPHONE COOPERATIVE ASSOCIATION
Oakdale, Illinois
Rice, Illinois
Venedy, Illinois
FINGER LAKES TELEPHONE CORPORATION
Rose Hill, New York
FOUNTAIN GREEN TELEPHONE COMPANY
Fountain Green, Illinois
GENERAL TELEPHONE COMPANY OF THE SOUTHWEST
Christoval, Texas
GRACEBA TELEPHONE COMPANY
Cottonwood, Alabama
GULF STATES TELEPHONE COMPANY
Athens, Texas
(Toll Center Intercept serving 10 exchanges)
HOLT TELEPHONE CO., INC.
Poteau, Oklahoma
MID-RIVERS TELEPHONE COOPERATIVE
Bloomfield, Montana
Brockway, Montana
Brusett, Montana
Circle, Montana
Crane, Montana
Fallon, Montana
Green, Montana
Jordan, Montana
Lambert, Montana
Lindsay, Montana
North McCone, Montana
Richey, Montana
OREGON WASHINGTON TELEPHONE COMPANY
Lyle, Washington
(Toll Center Intercept serving 3 exchanges)
THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY
French Gulch, California
PALESTINE TELEPHONE COMPANY
Birds, Illinois
PALMERTON TELEPHONE COMPANY
Kresgeville, Pennsylvania
Kunkletown, Pennsylvania
Palmerton, Pennsylvania
PENINSULA TELEPHONE AND TELEGRAPH COMPANY
Forks, Washington
RINGWOOD TELEPHONE COMPANY
Meno, Oklahoma
SANGER TELEPHONE COMPANY
Sanger, California
SIOUX VALLEY TELEPHONE COMPANY
Valley Springs, South Dakota
THE SOUTHWESTERN STATES TELEPHONE COMPANY
Basile, Louisiana
Coy, Arkansas
England, Arkansas
Iota, Louisiana
Kensett, Arkansas
Oberlin, Louisiana
Pocahontas, Arkansas
Washington, Oklahoma
Wayne, Oklahoma
TENAHA TELEPHONE COMPANY
Joaquin, Texas
WARREN TELEPHONE COMPANY
Warren, Texas
WATERTOWN TELEPHONE COMPANY
St. Bonifacius, Minnesota
WEST RIVER MUTUAL AID TELEPHONE CORPORATION
Hazen, North Dakota
WEST TENNESSEE TELEPHONE COMPANY
Bradford, Tennessee
Rutherford, Tennessee

as of 12-31-58

ON ORDERS DIRECT TO UNIVERSAL, BILLING WILL BE THRU YOUR PREFERRED DISTRIBUTOR.

Grubstake - 1959

THE only real difference between Alaska and the "other 48" is latitude.

For example, you won't have to go far in Alaska to find a typical community, one with a distinct past and an optimistic future. It's Sitka: international meeting place, site of the first Russian settlement in North America; the "Paris of the New World" (in the late 18th Century); *home of the Sitka Telephone Company;* location of the second huge pulp mill in Alaska; mecca of tourists, fishermen, lumbermen, where millions of dollars have been invested to make Sitka a center for communication, culture and industry.

Under the Czars

When Russia owned Alaska, Sitka, because of its moderate climate, became Alaska's capital, the seat of court and social activities outside continental Russia. Since then Sitka has twice aroused international interest in its activities.

World prominence first came to Sitka in 1867, when the U. S. and Russia met for that historic conference that resulted in the purchase of Alaska.

New Business Alliance

Sitka's second bid for fame came more recently through an important conference of Japanese and American businessmen. The transaction that transpired marked the first step in the organization and construction of a $55,000,000 Japanese-owned pulp-producing plant in Sitka. This meeting made the development of Sitka's industrial future an assured fact while it increased the employment of Alaskans by nearly 600.

Keen satisfaction with results of the meeting were expressed by the Japanese industrialists through Mr. Tadao Sasayama, president of the Alaska Lumber and Pulp Co.: "Establishment of a dissolving pulp plant in Sitka will mean year-round employment for hundreds of Alaskans."

Telephone Growth Assured

Unknown to the businessmen at that meeting, the transaction also helped assure the continued growth of the Sitka Telephone Company for years to come. It laid a sturdier foundation for investment in modern telephone

Although the pulp mill is Japanese-owned, the mill and its logging operations will be under American management. As much as possible, employees will come from Southeastern Alaska, where Sitka is located.

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equipment which has found its way into the homes, small businesses, private and government-sponsored institutions in and around Sitka.

It was obvious, then, that the need for pulp by Japanese industries had a greater far-reaching effect than was originally anticipated by either the Japanese businessmen or the United States Forest Service. For it was through the Forest Service of the United States Department of Agriculture that the Japanese firm, representing 76 pulp-starved industries in Japan, was allowed to bid on the purchase of timber in and around Sitka.

Suddenly it was as though another gold rush were in the making. This quiet community of 3,000, whose greatest activity was playing host to enthusiastic tourists, had thrust upon it all the responsibility that accompanies a large industry moving into town.

Fast Organisation

Although the citizens of Sitka were not entirely prepared for the windfall, it didn't take them long to get organized. Small businesses showed promise of greater-than-expected growth; the airlines, for one, quickly noticed the increased traffic through Sitka. Telephone lines everywhere carried conversations filled with the excitement that fell over Sitka.

Water—millions of gallons of water—and power were needed for efficient pulp production. Sitka Public Utilities prepared for the huge demand in a unique way: normally the pulp mill would build its own dam; instead it will buy water from Sitka. In this way it will be financing a new city dam on a cooperative basis while furnishing the area with low-cost power.

Greatest Challenge

At the same time, the Sitka Telephone Company, which had been prepared only for normal expansion, was suddenly faced with the greatest challenge in its short 20-year history. Where modernization to dial service had been a long range plan, now this

Construction workers of the Sitka Pulp Mill builders are hard at work.

seemingly superhuman task was pushed up to only months away!

Money. This small Independent telephone company needed money in a hurry. Just as the pulp company—in its urgent need—turned to private loan organizations in the United States for more than a third of its financing, so did the Sitka Telephone Company.

Time was growing short. Owners Martha and John Cushing turned to the Stromberg-Carlson Credit Corp. for help. Virtually overnight, a loan, ultimately totaling $370,000, was arranged. The Sitka Telephone Company went ahead quickly with plans to expand and improve service.

All-Inclusive

The loan covers the entire reconstruction and rehabilitation of the exchange, including the new building, the XY® Dial System (800-line, 1000-terminal CDO), cable and construction labor. The new exchange is a far cry from the common battery service the company started with 20 years ago.

Martha and John Cushing and Manager Richard Cushing are more than pleased, not only with the loan itself, but also with the advantages of dealing with just one agency which has *within itself* the experts qualified to investigate, recommend and carry forward the complete modernization program. Legal counseling, engineering, financial and accounting assistance are all within the normal scope of the Stromberg-Carlson Telephone Finance Department.

With the business upsurge in Sitka came the demand from private businesses for more telephone lines—more versatile telephone equipment. The Sitka Telephone Company answered the call by providing a 50-line No. 120 floor model, cord type PBX Switchboard at the pulp mill contractor's office; a No. 121 cordless PBX Switchboard at the Presbyterian Sheldon Jackson Junior College and another at the new bank built just about a year ago. A 6K-1 Key System, 2 multiline installations and another system consisting of three 3-line telephones have found their places in the Alaska Coastal Airlines office, the Sitka Cold Storage Co., and the Sitka Public Utilities. The community has also taken advantage of the new dial system to activate the latest fire alarm reporting system.

The location of the huge $55,000,000 pulp mill in Sitka recognizes the growing importance of Alaska in the American economy; the loan to the Sitka Telephone Company and the conversion to XY Dial also recognize the vital importance of dependable communication to Alaska, Sitka and its commercial enterprises . . . a real credit to the farsightedness of Martha and John Cushing.

Stromberg-Carlson is proud they were asked to help the Sitka Telephone Company, which is so typical of American Independent Telephone Companies providing their communities with the best in telephone service.

Aerial view of Sheldon Jackson Junior College (below, top) shows trim, modern campus. In the bottom picture R. Rolland Armstrong, President, and Secretary Edith Harding look pleased with their No. 121 Cordless Switchboard.

Richard, Martha and John Cushing (below) saw the advantages of leasing from Stromberg-Carlson an F-80 XY Dial PBX for the pulp mill. Leasing "frees" more capital to buy other telephone equipment.

The "busiest office in town" is that of Alaska Coastal Airlines. The man using the Stromberg-Carlson 6K-1 System is Mr. O. Paxton, airline manager.

A B C of the Telephone

by Frank E. Lee

"THERE'S MORE than one way to skin a cat" is a comment that many boys have heard as grandfather taught them a new idea in his basement shop or on some trout stream. The writer would be one of the first to confess that he doesn't know much at all about cat skinning. However, if grandfather meant there is more than one way to hang a cable on an aerial strand, he certainly would be speaking the truth.

A number of methods of supporting aerial cable have already been discussed in some detail in this series of articles. A quick review of these methods follows:

Marlin twine wrapped around cable and messenger. Marlin wrapping was used as far back as 1883. The marlin twine rotted away after two or three years and had to be replaced. This proved to be quite costly and the twine was pushed into the background as various types of cable rings were developed. An interesting note on supporting cable with marlin twine: it was the forerunner of cable lashing as it is known today.

Ring-supported cable. Included in this method of supporting cable are crimped sheet metal rings, spring steel rings, various hangers, hooks, ring shields, and similar devices.

Lashed cable. The cable and messenger are lashed together with a continuous length of steel lashing wire. In most instances, the wire is applied with a cable lashing machine which, very often, is called a cable spinning machine, or, perhaps, spinner for short.

Cable Lashing Rods

Another interesting and satisfactory way of supporting aerial cable is with galvanized steel or copper-coated steel lashing rods. The rods can be applied directly to the cable and strand and do not require the use of any tools or machines. The lashing rods are formed or shaped into the precise spirals required for application to various cable and messenger combinations ranging from .400 inch to 4.000 inches over-all diameter, as shown in *Fig. 1A*.

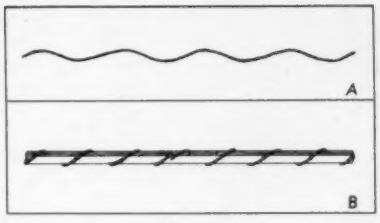

Fig. 1

The rod sizes range from .094 inch to .175 inch depending upon the diameter of the spiral which governs the size and weight of the cable to be supported. The lashing rods are manufac-

(Please turn to page 62)

PART 87. OUTSIDE PLANT CONSTRUCTION—Section 13. Application of lashing rods, lashed cable supports, and typical aerial cable arrangements.

Section 1. Planning of additions to outside plant (TELEPHONY, Nov. 17, 1956).

Section 2. Laying out the pole line, clearances to be maintained, and grading requirements (TELEPHONY, Nov. 24, 1956).

Section 3. Selection, treatment, handling, storage, and gaining of poles (TELEPHONY, Dec. 1, 1956).

Section 4. Items of power equipment used in pole line construction and maintenance. Also discussed are depth poles set in various types of soil (TELEPHONY, Dec. 8, 1956).

Section 5. Purpose of guy wires and factors involved in their proper placement (TELEPHONY, Feb. 16, 1957).

Section 6. Types of guy wires, how to determine guy loads, and the selection of guy strand (TELEPHONY, Feb. 23, 1957).

Section 7. Selection and installation of anchors (TELEPHONY, Apr. 27, 1957).

Section 8. Selection and installation of anchors—continued (TELEPHONY, May 4, 1957).

Section 9. Installation of new cable facilities—lead and plastic (TELEPHONY, Sept. 14, 1957).

Section 10. Installation of new cable facilities—lead and plastic (TELEPHONY, Mar. 8, 1958).

Section 11. Methods used to fasten aerial cable to messenger strand (TELEPHONY, Aug. 9, 1958).

Section 12. Methods used to fasten aerial cable to messenger strand —continued (TELEPHONY, Aug. 16, 1958).

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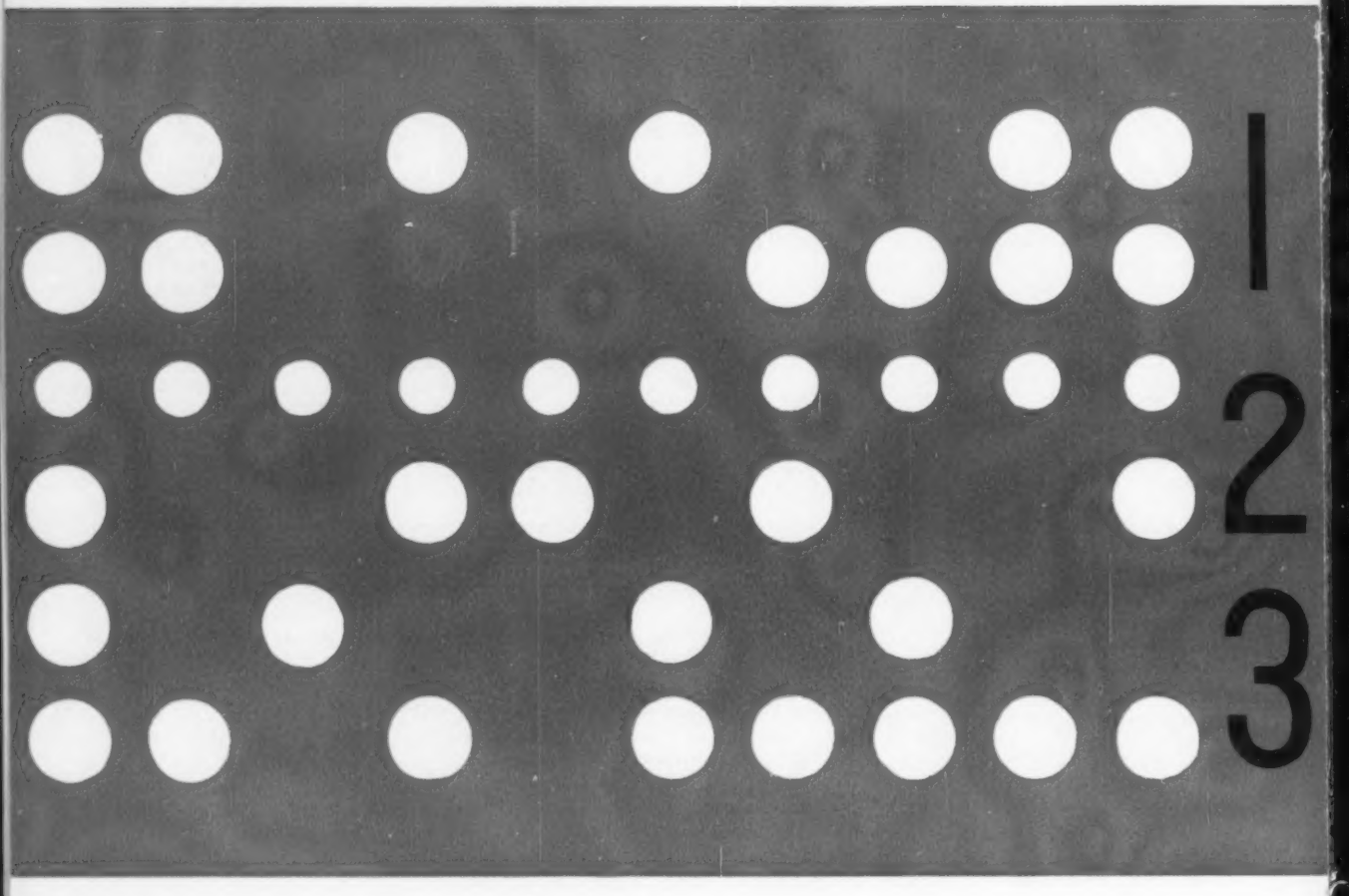

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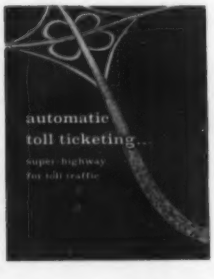

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tured in 5- and 6-foot lengths. They are also formed in other lengths as a particular job may require.

Cable lashing rods can be applied directly to the strand and cable without using special tools or machines. Actually the easiest way to describe their installation is to say they are just wrapped on the cable and messenger. Each rod supports the cable independently of other rods in a span, as illustrated in *Fig. 1B.*

Once the rods are wrapped around the span and messenger, they stay in place without being anchored or fastened to the strand at any place in a span. The rods can be installed from a platform of a tower truck; from a ladder moved along a span, or by a lineman riding the span in the familiar cable or messenger seat.

Lashing rods can also be used to advantage in routine maintenance of a cable supported by lashing wire. If a lashing wire is accidentally cut or broken, an entire span may unravel and allow the cable to sag. Lashing rods can be used to repair the damage if a cable spinner is not available.

Generally the lashing wire is anchored or temporarily tied a few feet on either side of the section where a splice is to be made. The availability of lashing rods makes it possible to remove the lashing wire and resupport the cable as follows:

Permanently anchor the lashing wire outside the splice area.

Complete the splice in the usual manner.

Refasten the cable with lashing rods.

Apply lashed cable supports at the splice.

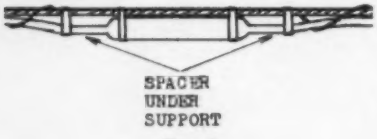

Fig. 2

A typical splice made on this basis is shown in *Fig. 2.*

Lashed Cable Supports

Lashed cable supports are generally used for splices, strand-mounted terminal installations, and at similar locations. Usually, the cable is separated a few inches from the strand at these locations. In most instances, cable spacers are used in conjunction with the lashed cable supports, as shown in *Fig. 2.* This provides the necessary spacing between the cable and the support strand. Also, the cable is as securely fastened to the strand as it is further along the span where it is lashed directly to the strand.

As a rule, lashed cable supports have stainless steel or zinc straps about ½ inch wide or wider. The strap looks like a trouser belt with a simple belt loop at one end. The length of the strap is 22 inches or 28 inches, as a general rule. In some instances the lashed cable support is locked in place with a simple clamping device similar to the clamping screw arrangement on the strand terminal illustrated in *Fig. 3.*

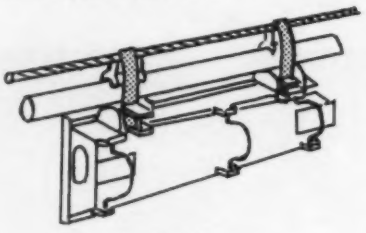

Fig. 3

Cable spacers are available in various shapes and sizes. The spacers are generally shaped to fit the contour of the strand and cable. This furnishes the correct bearing surface to permit lashing the cable securely in place.

Typical Cable Arrangements at Roadway Intersections

As a general rule, aerial cables are placed along public right-of-ways such as highways, streets, parkways, alleys and similar locations. This means that the cable, poles, and guy wires must be installed within certain limitations with regard to height and width considerations along the route. Basically this means the cable run must conform to the design and layout of the roadway because the roadway seldom is planned to accommodate the telephone cable plant.

Many of the factors involved in the planning of an aerial cable route have been discussed in previous articles in this series. However, there are several cable arrangements at roadway intersections which involve consideration of all the factors associated with aerial cable construction including placement of poles, guy wires, strand wire, and cable.

As a result, a brief discussion of these problems is appropriate at this time. The fact that a blueprint cannot be prepared covering every aspect of cable construction is one of the most interesting results of this or any discussion of typical cable arrangements.

The engineer or lineman who understands the reasons why a job must be done in a more or less specific way will do a better job than if he didn't know the reasons why.

For example, in the following discussions, a primary consideration is to keep the cable and strand over the right-of-way area assigned to the telephone company. Safety of the vehicles and pedestrians along the right-of-way is another very important factor. The appearance of the finished job also has a bearing on the way the various components are put together.

Finally, there is a great deal of satisfaction in doing a job that has a professional look about the way it is done. Generally, even the most experienced lineman will recognize a feeling of satisfaction when he sees that a job has been completed with a professional touch.

Five typical conditions of roadway and cable arrangement are as follows:

(1) Two roadways intersect—the cable route is extended in each direction from the intersection, as illustrated in *Fig. 4.*

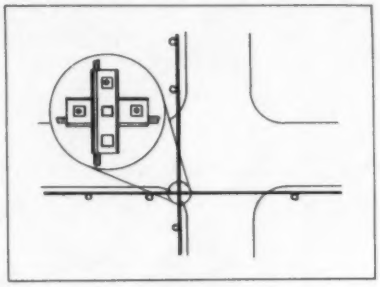

Fig. 4

Generally this situation results when branch cables are installed to serve customers along a street that intersects the street along which the main or feeder cable is installed. The main strand and cable is given preference by being placed under the branch cable at the intersection. Guy wires usually are not required at the corner because the strain on the pole line is equalized in four directions at the crossover.

The wide radius of the corners shown in the illustration places the intersection of the two-strand cable at some distance beyond the curb line. The right angle strand crossing is preferred rather than pulling one strand out of line to make the crossover at a pole.

(2) Two roadways intersect—the cable route turns a corner at the intersection, as shown in *Fig. 5 (Page 98).*

The corner in the cable run requires the installation of guy wires to offset the pull of the corner. The strand wire running in each direction from the corner is extended across the roadway where head guys are installed. The extension of both strand wires across the street is preferred to crossing the street diagonally.

(Please turn to page 98)

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April 21, 1959

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

IN SEATTLE, WASH., the public library board has cracked down on the student who depends on the librarian to do his home work for him—by telephone. The board recently approved the following declaration of library policy:

"Telephone service cannot be given to students or their parents working on school assignments. Such service defeats the purpose of school assignments, interferes with normal telephone service, and delays assistance to the patron who has come in person to the library."

The library claims it has been forced to limit such telephone service "in self-defense." Students, often abetted by indulgent parents, have been running obliging librarians ragged. Why bother to look up the date of the Declaration of Independence when you can pick up the telephone and ask the librarian to do it for you? There are tens of thousands of students, and the over-worked librarians are finding it impossible to keep up with the telephonic homework load; hence, the ruling.

•

Someone asks, "What would you call a transistorized vacuum tube voltmeter?" One company has solved this problem by referring to theirs as "an ac electronic voltmeter."

•

Anyone who has plans either to buy equipment for an amateur radio station, or build one, should have in his possession a new book sold by TELEPHONY titled: "Building the Amateur Radio Station." This 136-page, soft-cover book sells for $2.95. This is the next step for the amateur radio enthusiast who has earned his operating license. In his sequel to "Getting Started in Amateur Radio," the author, ham operator W2PIK, has written an all-inclusive guide for construction of the novice and general ham stations.

Every tool and its use is mentioned. Chassis layouts are provided and text instructions are reinforced with diagrams and illustrations. This book also includes instructions for receiving and transmitting.

•

We have just received a letter from Earl F. Howlett, manager, carrier division of the Budelman Electronics Corp., in which he describes two technical training sessions presented by that company during March to the Texas Statewide Telephone Cooperative Association. The first two-day session was presented for the telephone companies in the northwest Texas and New Mexico area and the second in Waco, for those companies in southeast Texas.

Mr. Howlett mentions the fact that all operating companies have an ever increasing need for closer cooperation and liaison with the suppliers of new telephone electronics equipment in order to achieve optimum equipment performance with the least maintenance expense. This type of plant school appears to be the most practical and effective method of accomplishing that objective. Not only do the telephone people gain valuable technical training, but, also, these plant schools enable the manufacturers to verify their own equipment design and production objectives on the basis of direct reports from the operating people.

Moreover, we are informed by Mr. Howlett, while it may not be possible in every case, if any other telephone group similar to the Texas Statewide Association would be interested in a plant school on carrier, the Budelman Electronics Corp. will be happy to try to arrange a similar program.

•

A dollar may not go as far as formerly, but it makes up for it in speed.

•

During a period of one week, we witnessed one fall and two near accidents resulting from a loose telephone cable located near an office desk.

When a key-type telephone is installed on a desk that is located against a wall or over a floor outlet, a loop or goose neck is generally left in the cable so that slack will be available to move the desk.

This cable may be taped or tied in place so that it does not present an accident hazard. If, however, the desk is moved, this loop is generally loosened so that it makes a good trap to trip people who make fast and short turns around desks.

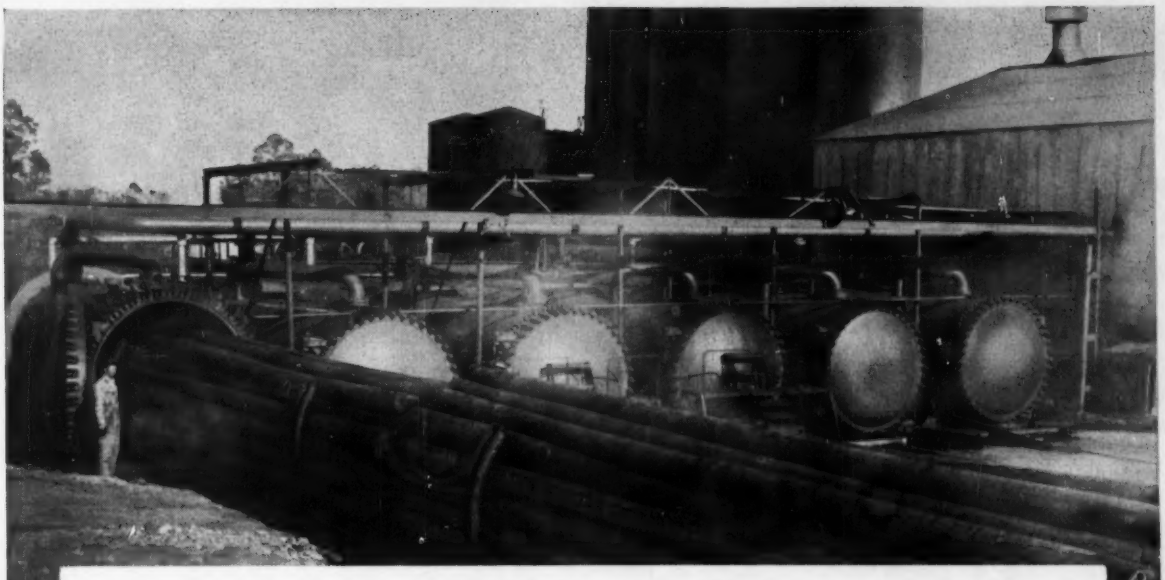
The condition mentioned above is always one that is difficult for operating companies to control. Subscribers will sometimes move desks despite instructions to call the telephone company when the move is necessary in order that wiring can be rearranged. Perhaps some spring type of anchoring device could be designed to prevent slack from forming in cable even when a desk is moved by the subscriber. At any rate, this is something that safety engineers might be well advised to think about.

•

It is reported that the work of more than 40,000 employes is required to produce the 91 million copies of some 3,000 different Bell System telephone directories and to handle the auxiliary number services of Information and Intercept.

System-wide cost of providing telephone number service is estimated at 286 million dollars a year! Broken down, 165 million dollars is required to provide directories. Local Information takes 86 million dollars; Long Distance Information, 18 million dollars; and Intercept service, the remaining 17 million dollars.

We are of the opinion that in the not-too-distant future some mechanical device will be perfected to furnish number service at a lower cost than is possible with the present arrangement. Perhaps the electronic computer is the first indication that something can be done in this direction.



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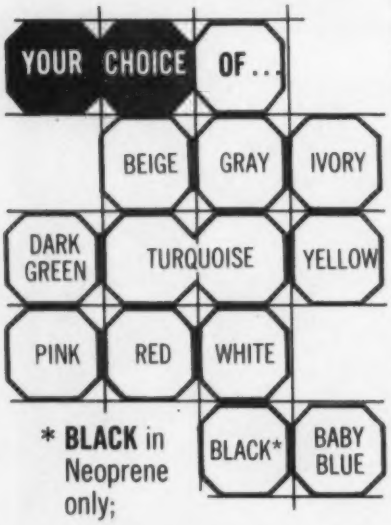

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Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Could you give us some pointers as to how linemen's leather belts can be maintained to insure their safety and long life?

A. One leading manufacturer of leather linemen's belts recommends the following rules for the care of leather:

"Go over leather at least once every 60 days and scrape out the 'scale' that forms at metal contacts. Examine for stretch, wear, cracks, and cuts. To wash, clean with saddle soap or some other mild soap.

"Dampen a rag with Neat's-foot oil and rub into the leather on the hair side. Do not flush the oil directly from the can — every inch of the leather should be uniformly covered to keep it pliable and water-proof.

"In storage, keep leather goods away from close contact with heat, such as steam coils, radiators or stoves. Leather exposed to heat deteriorates rapidly; becoming dry, brittle and unreliable. After exposure to water or acid, leather goods should be wiped off as quickly as possible with a rag dipped in Neat's-foot oil. Never dry damp or wet leather with the aid of heat. This weakens the fibre and may even destroy it.

"The bend test should only be made when the leather contains sufficient oil to make it soft and pliable. At room temperature, bend the leather slowly with the grain side out, over a mandrel not less than one-half-inch in diameter through an angle of 180 degrees. Do not bend at buckle holes. If belts and straps are abused by abrupt bending without a mandrel, cracks may occur because of the excessive strain put on the grain side.

"When tested as directed, the leather should show no cracks although there may be a slight opening up of the grain surface."

•

Q. Do you have any information on the new Fiberglas ladders and their suitability for general telephone work?

A. We understand that the Fiberglas reinforced ladder has proved extremely successful under all weather conditions. The standard duty extension ladders, 16 to 28-feet, weigh approximately 2¼ pounds per foot.

When tested under room conditions of 50 per cent relative humidity, they did not break down when a maximum of 120,000 volts was applied between the rungs. Aluminum rungs are standard, but they may be obtained coated with a non-slip, grit-imbedded neoprene at a slight extra cost.

•

Q. When installing buried cable plant, what methods would you recommend to provide mechanical protection at points required?

A. We suggest that you consider the use of a new device recently developed for this purpose. This device eliminates conventional pipe and does not require cutting and splicing of cable. This new application, known as "Cableguard," is literally a split pipe (in straight or curved sections), flanged to assemble over the cable on the job. A simple tool makes a permanent connection.

Cableguard has been successfully substituted for conventional pipe in practically all locations where mechanical protection of buried cable is required. It has been used successfully under small streams, over shallow rock beds, around immovable underground obstructions, over streams and culverts and as shielding when riser cable is attached to buildings or poles.

•

Q. Is it possible to obtain a book that explains the characteristics and use of metallic rectifiers?

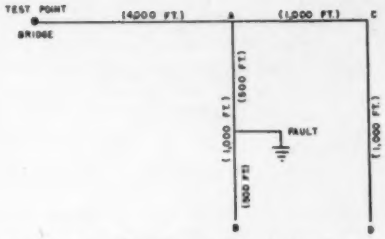
A. A soft cover book of 164 pages entitled: "Metallic Rectifiers and Crystal Diodes" can be purchased from TELEPHONY for $2.95.

This book unfolds the principles and practices of metallic rectifiers and crystal diodes in a comprehensive manner. While the emphasis is not on the design problems, the details given enable the reader to gain a greater insight into the "where," as well as the "how," of these devices in a broad variety of applications.

Well illustrated and easily readable, this book will add materially to the technical background and capabilities of engineers, laboratory technicians, students of electronics, television, and radio personnel, and radio amateurs, as well as the experimenters who are keeping up-to-date with the modern ideas of electronic technology.

TESTING WITH THE WHEATSTONE BRIDGE

Continued from page 24

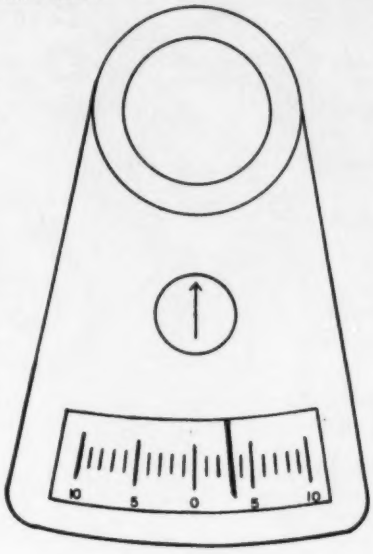


to be at A. Fault could be at A, or any place between A and B. Therefore, another test should be made with the strap applied at B. If the fault again calculates to be at A, there may be no further doubt.

If the fault does not calculate to be at A, with the strap applied at B, the second test will disclose the fault to be between A and B, and no further tests should normally be required.

(2) If fault is calculated to be as indicated on sketch, and a more accurate measurement is desired, then eliminate the 4,000 feet of conductor by moving the bridge to point A, and apply strap at point B.

Extension of rheostat reading to tenths when galvanometer needle will not "zero".



GALVANOMETER

As previously indicated, the bridge is considered balanced when the galvanometer reads zero. The zero reading simply indicates that no current is flowing between the two legs of the bridge. There are occasions, however, when it is impossible to obtain absolute zero.

For example, assume the galvanometer needle rests at three points to the right of center with the units dial of the rheostat set at 4, and two points to the left of center with the dial set at 5, then the rheostat reading can easily be carried out to tenths as follows:

The total needle swing is 3 points right, plus 2 points left, or 5.

Then:

$$\frac{\text{Points right}}{\text{Total Points}} = \frac{3}{5} = 0.6$$

Therefore:

Rheostat reading in tenths would be: the lesser of the two "straddle" dial readings plus the right needle swing calculation, or 4 plus 0.6 resulting in a corrected rheostat reading of 4.6.

The extension of rheostat readings to tenths is calculated only when additional accuracy may be desired. It is

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NOT just because Lindsay provides prompt delivery of nationally known supplies exactly as ordered... but also because of the friendly, personal way we do business, we think you'll like Lindsay. Try us and see!

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360 East Highland Rd., Northfield, Ohio
Telephone: IMperial 7-7181

ANNEALED COPPER WIRE

B&S Gauge	Type	Temperature Degrees Fahrenheit 20	30	40	50	60	70	80	90
		FEET PER OHM-SINGLE							
10	Open wire, single	1118	1091	1066	1041	1018	996	975	955
12	" " "	703	686	671	655	640	626	613	601
16	Cable, single cond.	271.91	265.68	259.63	253.73	248.35	243.07	237.99	233.11
17	" " "	215.67	210.73	205.93	201.25	196.99	192.80	188.77	183.21
19	" " "	135.63	132.52	129.50	126.56	123.88	121.24	118.71	116.28
22	" " "	67.65	66.10	64.59	63.12	61.79	60.47	59.21	58.00
24	" " "	42.54	41.57	40.62	39.70	38.86	38.03	37.24	36.47
		OHMS PER MILE, SINGLE CONDUCTOR							
10	Open wire, single	4.72	4.83	4.95	5.06	5.17	5.29	5.41	5.52
12	" " "	7.51	7.69	7.88	8.06	8.24	8.42	8.61	8.79
16	Cable, single cond.	19.41	19.87	20.33	20.79	21.25	21.72	22.18	22.64
17	" " "	24.48	25.06	25.64	26.23	26.81	27.39	27.97	28.56
19	" " "	38.91	39.84	40.76	41.69	42.62	43.55	44.47	45.40
22	" " "	78.08	79.86	81.72	83.58	85.43	87.30	89.14	91.01
24	" " "	124.06	127.02	129.98	132.93	135.88	138.84	141.77	144.62

especially useful when making calculations with the Simple Varley method.

Precautions and Helpful Suggestions

Test lead connections, and distant-end straps, *must* be firm and bright to insure low resistance.

Test leads and straps should be as short as possible, otherwise additional calculations may have to be made to eliminate their effect on final calculations.

Fortunately, in actual practice, the most frequently used calculations are those involved in determining the distance from strap to fault (Xb), in which event the test leads at the bridge are of no concern (except that connections are clean and firm). However, if the distance from the bridge to fault (Xa) is desired, then the resistance of the test lead, or leads, must be reckoned with in final calculations.

Keep in mind that with all the rheostat dials set at zero (no resistance), the galvanometer needle will swing to the right of center. Failure of the needle to swing to the right indicates improper connections, usually a turnover of leads connected to X1 and X2.

Observe carefully the instructions in the bridge concerning the use of external battery, as failure to do so may cause a burn-out of the galvanometer.

Follow carefully the operating procedures of "balancing the bridge," as outlined for the specific instrument in use, otherwise the galvanometer may be damaged.

Avoid measuring through fuses and heat coils, unless they are the object under test.

The resistance of a fuse in a Varley Loop Test (for crosses) may cause an error in final calculations of well over 100 feet.

Spiraflex® CORD

BY GENERAL INSULATED WIRE WORKS, INC.*

*Licensed to manufacture under existing patents.

Telephone cord sets of proved performance backed by General Insulated's unmatched experience and know-how in the manufacture of quality telephone tinsel cordage:

Spiraflex HANDSET CORDS in bright colors with non-staining thermoplastic jackets in solid color extrusions matching color shade and sheen of telephone sets. Also non-staining black Neoprene jacketed cords. Both types available with or without integral moldings and terminations. Furnished in standard or extra long lengths.

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A DIVISION OF GENERAL CABLE CORPORATION
Providence 5, Rhode Island

BOOK REVIEW

"HANDBOOK OF ELECTRONIC CIRCUITS," by RCA Service Co., Inc.; 66 pages, 8½" x 11"; $1.00.

Probably no one but a skilled design engineer can look at a complex electronic circuit and be able to analyze all of its functions. Yet, many basic circuits are the same, whether used in a simple radio receiver or a large computer.

This book was designed as a convenient reference for basic circuits to help RCA factory test and technical personnel. It is tersely written, with a simple one-tube diagram for most functions. Each basic type of circuit—oscillator, detector, amplifier, mixer, limiter—is treated in the same format; that is, the use of the circuit, an analysis of the circuit, and a trouble analysis.

The latter is especially useful, because it describes the kind of trouble that would result from failure of each of the components. For instance, in describing a rectifier circuit, the book tells just what would happen if the choke coil developed an open, if the condenser became either open or shorted, and if the voltage divider resistance should fail.

This book is one of the best the reviewer has seen in this field. It is recommended for anyone who has to work on any kind of electronic apparatus. You can purchase a copy from TELEPHONY.

Reviewed by Harold McKay, TELEPHONY's Electronics Editor.

THE MOST WIDELY-USED TELEPHONE DRY CELL IN THE WORLD...

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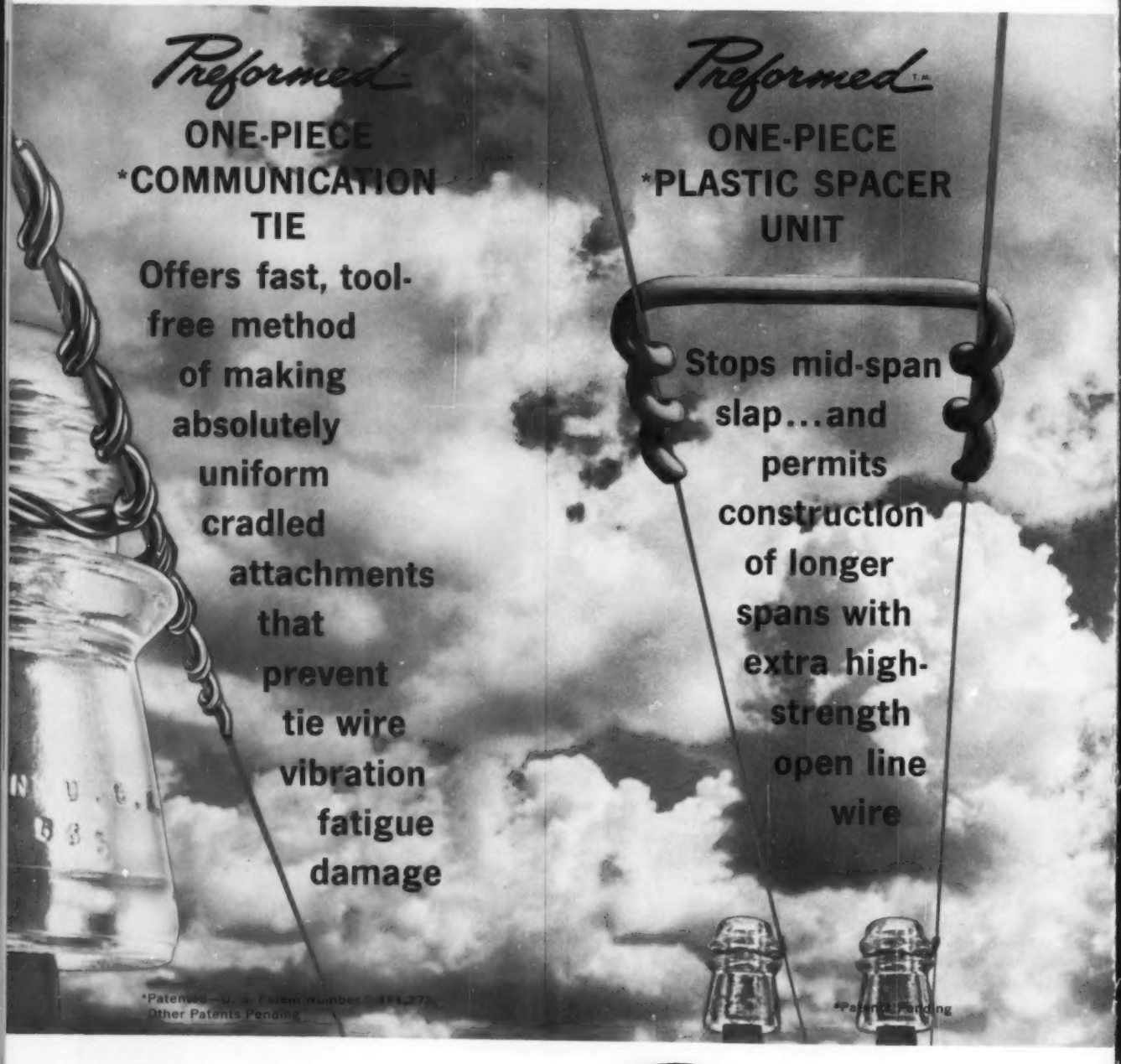
NEW CONSTRUCTION CONCEPT... FOR OPEN LINE WIRE.....



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ONE-PIECE *COMMUNICATION TIE

Offers fast, tool-free method of making absolutely uniform cradled attachments that prevent tie wire vibration fatigue damage

Preformed T.M.

ONE-PIECE *PLASTIC SPACER UNIT

Stops mid-span slap...and permits construction of longer spans with extra high-strength open line wire

*Patented—U. S. Patent Number 3,111,277
Other Patents Pending

*Patent Pending

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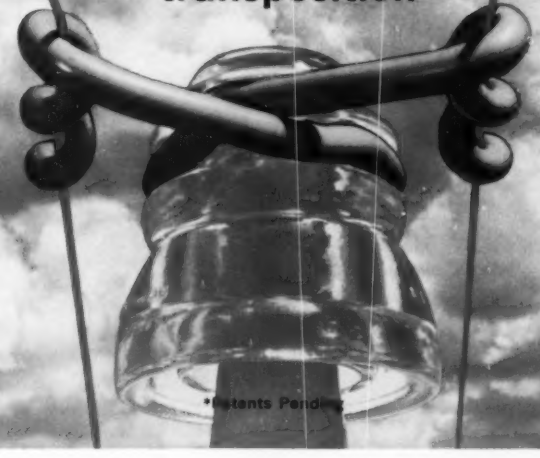
ONE-PIECE *PLASTIC PINCH BRACKET

Eliminates five parts, plus installation time, and provides cradled, controlled 4' spacing of open line wire before transposition



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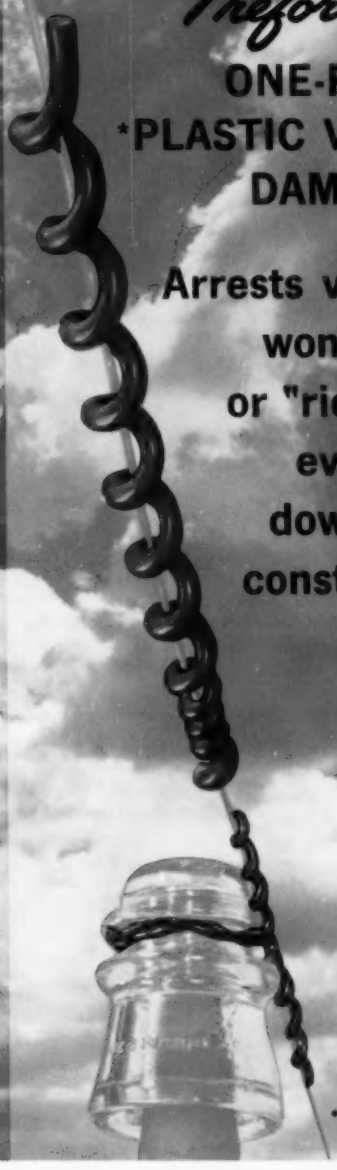
ONE-PIECE *PLASTIC VIBRATION DAMPER

Arrests vibration; won't spin or "ride" even on downhill construction



*Patents Pending

PREFORMED LINE PRODUCTS COMPANY
DEPT. 4T
5349 St. Clair Avenue • Cleveland 3, Ohio

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

GREETINGS to all the operators in our new states of Alaska and Hawaii! We are happy to welcome them into our Independent telephone family, since the telephone companies in the 49th state, Alaska, and the 50th state, Hawaii, are Independently operated.

The Independent Telephone Pioneer Association, an important segment of the Independent industry, has a chapter in each of the new states—the John A. Balch chapter in Hawaii, which has been in existence for a long time, and The Last Frontier chapter in Alaska, organized in 1957.

The membership of the Independent Telephone Pioneer Association is comprised of men and women who have been in the Independent industry, or its associated interests, for 15 years or longer; plus Independent telephone, manufacturing, and supply companies; along with auxiliary members. These auxiliary members are the husbands and wives of accredited members. The organization is comparable to the Telephone Pioneers of America, the Bell pioneer organization.

There was great rejoicing in the newly acquired states when their statehood was announced. Thanks to the thoughtfulness of Douglas S. Guild, vice president, Hawaiian Telephone Co., in sending a copy of the *Honolulu Star-Bulletin* newspaper to the writer, she is able to tell you about some things which transpired in the islands when their statehood was announced. Having visited the islands, the writer could visualize the celebration.

Sirens and bells heralded statehood arrival in Hawaii. On the evening of Mar. 12, there was street dancing at Iolani Palace, on Kalakaua avenue, at the Moiliili Community Center, Waialae-Kahala Shopping Center, Kailua Shopping Center, Kaneohe, Wahiawa Civic Center, Waipahu, Moanalua Shopping Center, Kalihi Shopping Center and in Pauoa. The international bonfire was lit at Sand Island at 7:25 p.m.

From 7:30 to 9 p.m. the armed forces set off pyrotechnics off Leeward Oahu. A joint concert by the Royal Hawaiian Band and armed forces bands was presented at 10 a.m. at the Palace, on the day following the announcement of Hawaii's statehood.

Another event which took place on this day was an interdenominational service at Kawaiahao Church. A statehood commemoration ceremony was also held there. At noon, a 50-gun salute was fired from the Palace grounds. Simultaneously, Hawaiian Air National Guard planes flew in formation over the legislative chambers.

Special radio and telephone lines flashed the news of Hawaii's statehood to the islanders. Once again, telephone folk played an important role in delivering a message of vital importance to people who had long awaited this joyous news. Statehood for the islands was urged by the Whig Paper in 1849.

The 50th state will probably be nicknamed the "Aloha State," a most appropriate term. Territorial license plates already carry the word "Aloha."

Kamaainas (old timers) on the islands were thrilled when the news of Hawaii's statehood was received.

Music, one of the many fascinating things on the islands, has not been overlooked. The state of Hawaii will retain its national anthem—"Hawaii Ponoi"—handed down from King Kalakaua's kingdom. A gifted musician, the King composed the song, and it was set to music by Henri Berger, royal bandmaster.

Kamaaina R. Alexander Anderson was right on time with his newest creation, a statehood song, "Hawaii U.S.A." He has written many songs, including "Lovely Hula Hands." Another statehood song, composed in 1955 by the Reverend E. Goodwin, has been revised and retitled, "Now Hawaii's a State."

Telephone operators at Hawaiian Pineapple Co. started answering "Hawaiian Pine in the Pineapple state" the morning following the announcement of Hawaii's statehood.

One caller replied, "Huh! That's funny, I just called another office and they said its the "Sugar state"—and somebody says it's the Aloha State. I'm confused!" There will probably be a great deal of confusion for awhile until all the necessary details are worked out, incidental to becoming a state.

We are proud to have Alaska and Hawaii as the 49th and 50th states respectively; and we extend a special cordial welcome and congratulations to all the telephone folk in these states.

Traffic Questions

(1) In recording a long distance call, if the calling party asks the operator to call him, how should the operator proceed?

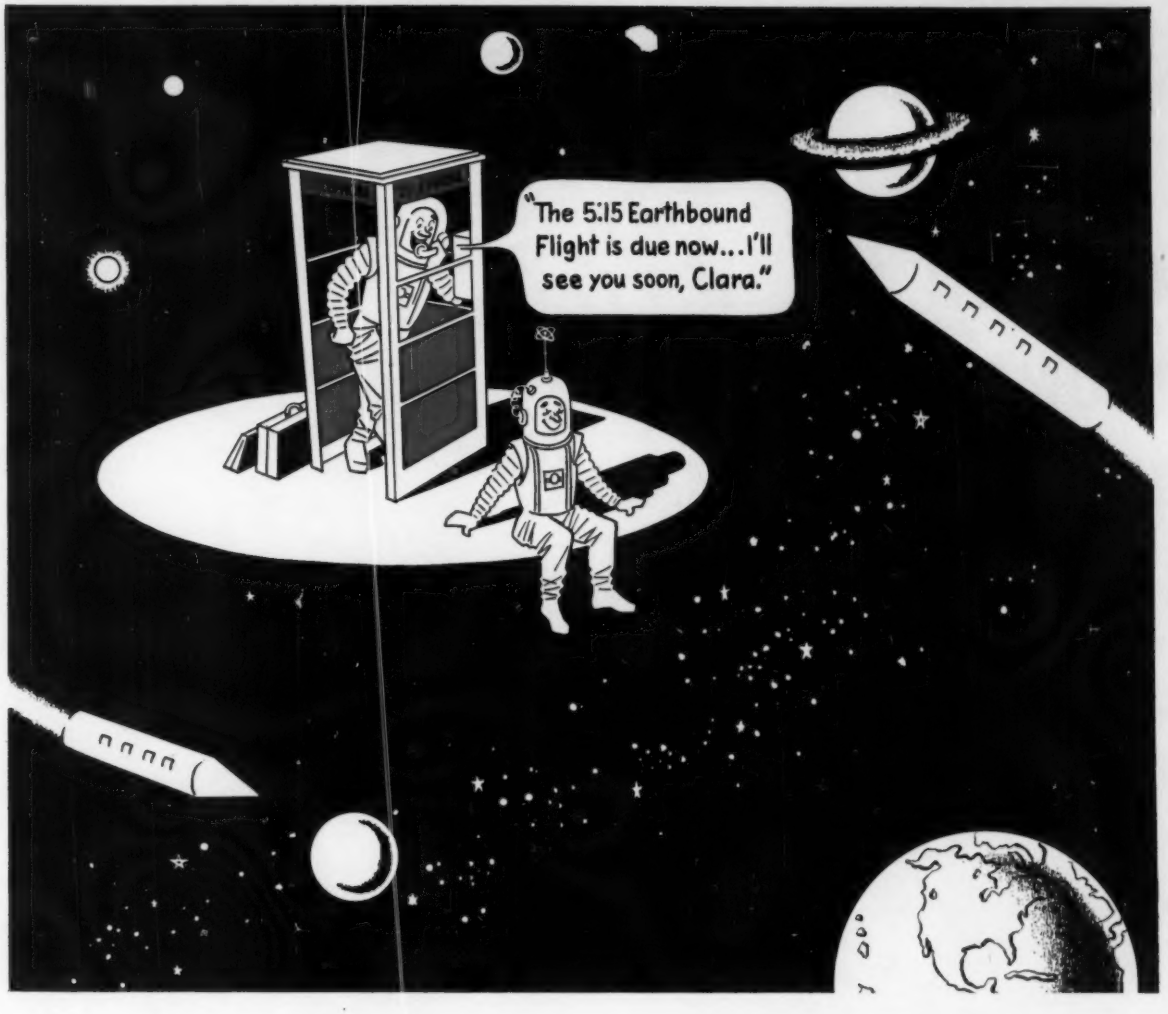
(2) When a long distance operator records a call, and the calling party asks her to call him, the operator asks him to hold the line, explaining she will try his call at once. If he still indicates he does not wish to hold the line, how should the operator proceed?

(3) If an "A" operator receives a call for "fire," "police," "help," or another emergency from a community dial office and the calling party is unable to give the number or location, or he does not remain at the telephone, what action should be taken by the operator?

(4) Which offices are provided with central office alarm signals?

(5) What happens when trouble conditions occur at a community dial office?

(Answers are presented on page 101.)



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Who knows? New, profitable locations for Reynolds Aluminum Outdoor Telephone Booths are being discovered every day. Meanwhile, until that age of space travel arrives, you can count on extra-revenue business right here on earth!

The demand for easy-to-set-up outdoor booths in heavy traffic areas steadily increases. The trend to huge suburban shopping centers makes them a must. Large housing developments, our expanding road program (*including* new gas stations and restaurants), theaters, sports arenas, construction projects—all welcome these convenient outdoor booths.

Now is the time to cash in on this *additional* business. Here's revenue over and above your regular indoor paystation income. And when indoor locations are inaccessible at night or week ends and holidays, these bright, attractive booths "flag down" users 24 hours a day!

Now, completely assembled booths available at reduced prices. *Write for prices and specifications. Address: Reynolds Metals Company, Richmond 18, Virginia.*

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COMPLETELY ASSEMBLED REYNOLDS ALUMINUM OUTDOOR TELEPHONE BOOTHS

KITCHEN PHONE PROMOTION BREAKS NATIONALLY THIS MONTH!

A broad sales campaign is under way right now to put extension phones in the kitchens of America. April issues of these widely read national magazines carry the advertisement, "Why you *need* a kitchen extension phone":

Life	Everywoman's Family Circle
Look	National Geographic
The Saturday Evening Post	American Home
Ladies' Home Journal	Better Homes and Gardens
McCall's	Reader's Digest
Good Housekeeping	Coronet
Woman's Day	Parents'

The illustration of the advertisement is shown at the right. In many cases it appears in full color. Total circulation of the magazines is about 67,000,000.

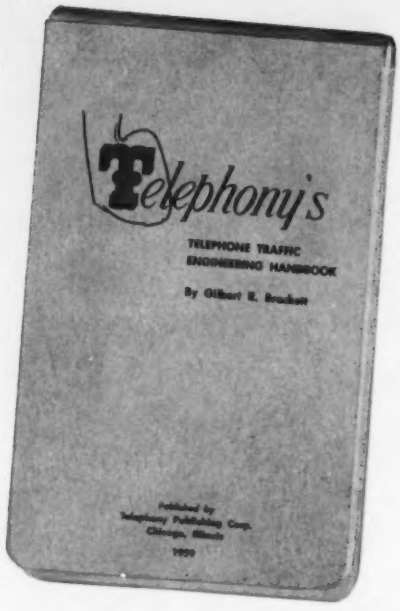
In addition, the April 9th Bell Telephone Hour, nationally televised on NBC-TV to millions of viewers, carried a commercial devoted to selling the step-saving, time-saving convenience of kitchen extension phones.

The purpose of the campaign is to encourage housewives everywhere to reach for their shopping lists and write down "Order kitchen phone today!"

Every call to a business office created by this ad provides an opportunity to sell complete home telephone service.

BELL TELEPHONE SYSTEM

NOW... AVAILABLE in HANDBOOK FORM!



"TELEPHONY'S TELEPHONE TRAFFIC ENGINEERING HANDBOOK"

By Gilbert R. Brackett

Because of the great demand on the part of telephone engineers, Mr. Brackett's popular series of articles on traffic engineering, published in TELEPHONY over a period of 10 months, has been reprinted under one cover—in the form of a 146-page pocket-sized handbook (4½" x 7¼"). The Handbook is so arranged that additional sheets may be inserted.

TELEPHONY engaged Mr. Brackett to prepare these articles as a result of requests for traffic engineering data from Independent telephone companies. The Handbook is the first complete pocket-sized book on traffic engineering that has been available to the telephone industry.

For the subjects covered, in sectional form, by the Handbook, see the next column.

MORE THAN 900 COPIES of the Handbook have already been sold for use by traffic engineers and as texts in traffic engineering training courses. All traffic engineers or men responsible for traffic department operations, should have copies of this valuable Handbook.

What is traffic engineering
The traffic engineer's job
The step-by-step automatic system
Traffic engineering assumptions
Line finders
Connectors
Selectors
Second selectors
Level "1" first selectors
Levels "2" and "3"—second selectors
PBX tie trunks
Intercepting trunks
Out dial connector trunks
Conference equipment (PBX)
Reverting call switches
Level "0"—Operator trunks
PBX Level "9"—central office trunks
PBX central office two-way trunks
Repeaters
Incoming selectors
Selectors and connectors—toll
Capacity tables
Assignments of line and station numbers
Customer usage
Traffic surveys
Equipment nomenclature
Miscellaneous traffic information
Traffic load estimating
Distribution of holding time (PBX)
Accepted system standards for ringing and silent periods
Maintenance items to look for on switchboard
Automatic exchange classifications
Traffic information
Inter-departmental cooperation
Judgment methods which assure reasonably good results in engineering
Handling overloads
Traffic engineering short cuts—automatic
Traffic engineering short cuts—manual
Short cut method—toll
Short cuts—power requirements, switch type C.O.E.
Graded multiple
Graded multiple engineering
The traffic unit
Force adjustment
Toll switchboard requirements
Traffic space requirements
Managing your service
Managing peak holiday traffic—toll
Managing your office—automatic
Managing your office—manual
Numbering arrangements
Influence of exchange rate structure on facilities

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Please find check enclosed to cover my order for copies of "TELEPHONY's Traffic Engineering Handbook" as follows:

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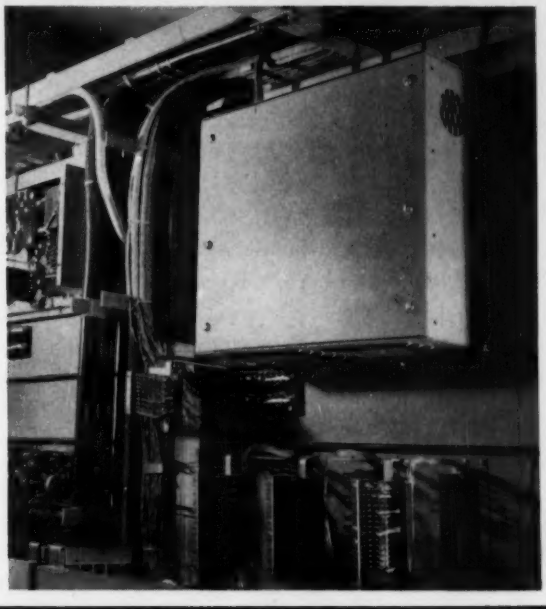
in the power field

WITH RAYTHEON

RAYTHEON

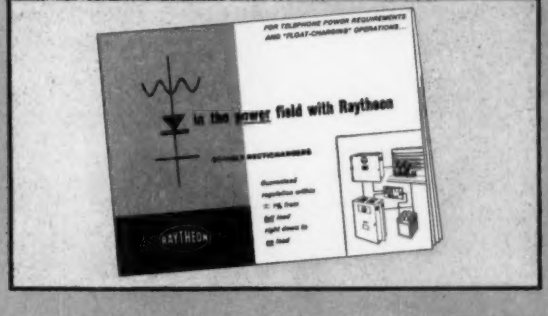
NEWS ABOUT RAYTHEON DEVELOPMENTS IN TELEPHONE POWER SUPPLIES

Raytheon Manufacturing Company, Industrial Apparatus Division, Magnetic Components Department, Daniel Webster Highway, Hooksett, N. H.



OREGON'S FIRST TOLL-TICKETING STATION USES RAYTHEON POWER SUPPLY EQUIPMENT

Two special Raytheon Rectifilters, W7076 and W7097, (above right) play important roles in this unique installation, located in the Redmond office of the Northwest Telephone Company. The company provides nationwide direct distance-dialing facilities to all its subscribers. The W7097 acts as a power source in series with the exchange battery identifying the party making the long-distance call. Information such as calling number, placed call and length of call is recorded on magnetic tape. The W7076 powers the read-out equipment as it lifts this information from the magnetic tape and places it on punched cards for billing. Vice President, Mr. Ray Crockett (above left) is shown outside the Redmond Office.



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Telephony is go

LENKURT "building-block" system plans for your growth

TELEPHONE companies are installing microwave to obtain additional toll circuits for several good reasons. Among them: (1) It is quick, easy and economical—(2) requires no right-of-way—(3) solves tough terrain problems —(4) is simple to maintain—and (5) highly reliable—more weatherproof than other facilities.

And experienced telephone people are choosing Lenkurt *Microtel!* That's because it's the most advanced microwave equipment on the market and the most flexible in design to meet future growth requirements. Consider the rate of toll growth and you'll see how important this is!

Simple plug-in units

With flexible Lenkurt 45BX Carrier, a system can be installed initially with only a few carrier channels. Then, as traffic increases, it can be expanded economically at will by the addition of more channelizing equipment or by paralleling transmitter-receiver assemblies.

All plug-in units of Type 74A Microtel are similar-to those in the famous "universal" Lenkurt 45-class equipment. This greatly simplifies maintenance.

Start small, if you wish, with as few as 4 to 12 channels. Later on you can add 12- or 24-channel groups on a stackable basis. A single *Microtel* terminal can accommodate up to 240 channels; and with r-f circulators, *as many as four systems can use the original antenna and antenna transmission line!* For complete information, send the coupon or call your nearest Automatic Electric representative.

Automatic Electric Sales Corporation
Northlake, Illinois ***(Att.: T. B. Collins)***

Please send booklet describing new Lenkurt Microtel System.

NAME..... TITLE.....

COMPANY.....

ADDRESS.....

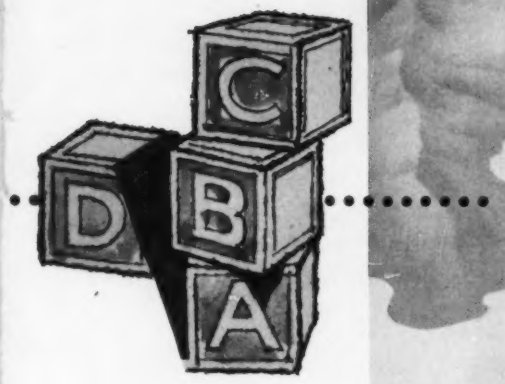
CITY..... ZONE..... STATE.....

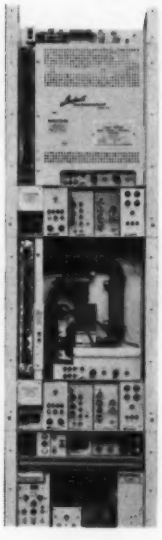
In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16, Ontario.

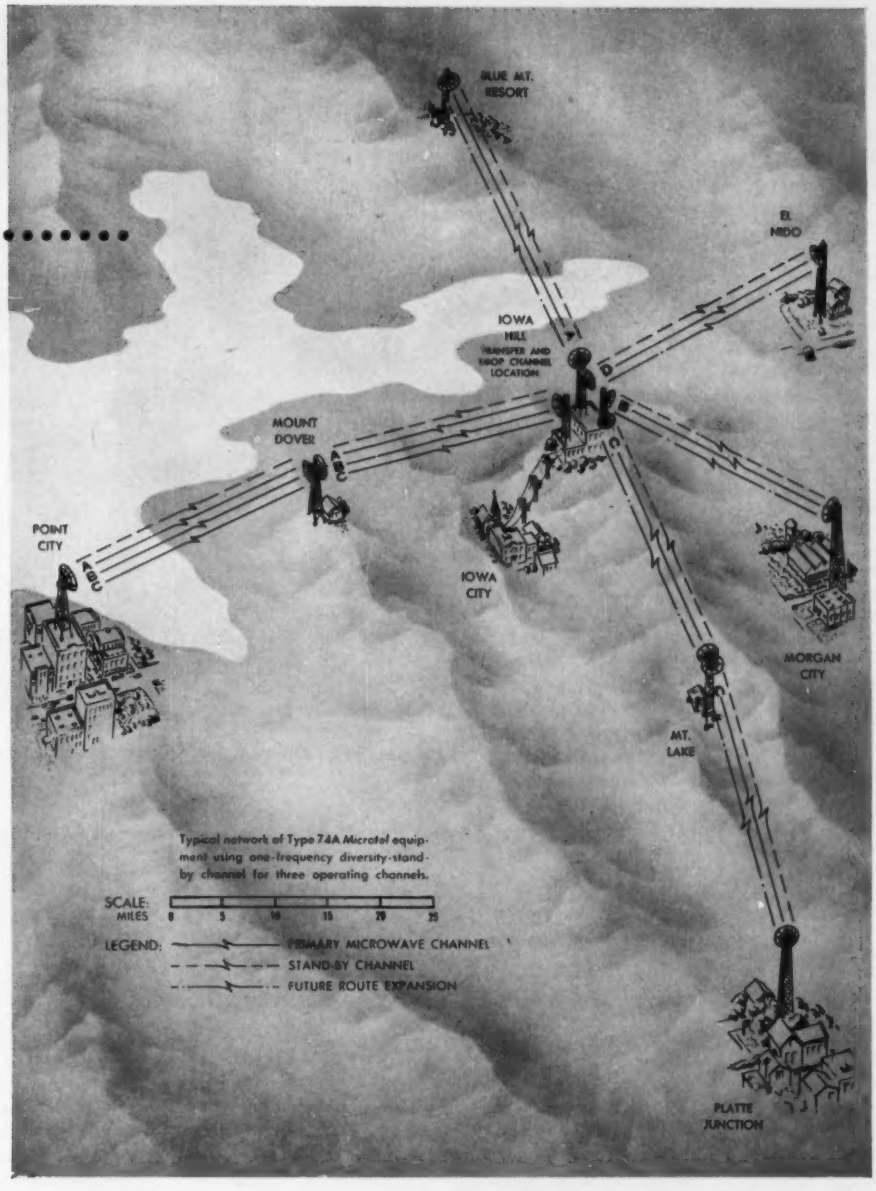
New 6,000 mc. **microtel** Type 74A

Designed to save space (2 systems can be mounted on a single rack) and use less power (only 360 watts per system), new Lenkurt *Microtel* Type 74A provides high-quality, broad-band microwave transmission facilities in the 6,000 mc. region. *Microtel* is equally satisfactory whether the need is for only a few circuits or for a high-density network with 720 voice channels (three operating r-f channels with one stand-by on a common antenna). As many as 960 voice channels can be supplied on 4 operating r-f channels. It is available from Automatic Electric as a complete package—*engineered, furnished and installed*—on one order.

ing microwave!







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KEEPING UP WITH LATEST DEVELOPEMENTS

(Continued from page 40)

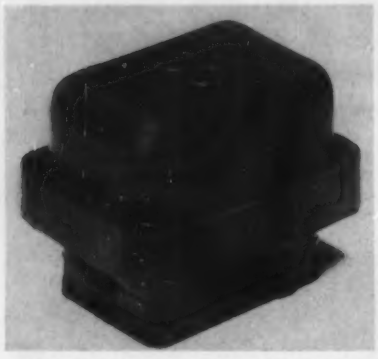


Fig. 108. "C" rural wire terminal.

only with No. 12-gauge copper-covered steel, or the .083 special galvanized steel conductor, plus the additional advantage of positive contact through gripping action and pressure on the terminal contact.

The terminal can be terminated at any place in the line wire at any time after installation without cutting the wire. The terminal is completely weatherproof, easily installed and removed.

•

Splice Case. (Fig. 109). The Robertson splice case is made in two sleeve-like parts, one of which slides over the other. When separated, wires inside the case may be spliced in the conventional manner. When the splices are completed, the splice case is closed and a beryllium copper clamping ring is applied to keep the assembly moisture-proof.

These splice cases are made of heavy polyvinyl chloride. This material has a tensile strength of 2500 psi. Dielectric strength is 400 volts per mil thickness. Polyvinyl chloride has good resistance to organic and inorganic acids and alkalies. It is fungus-resistant. The cases can be used in temperatures from 250° F. to —65° F. They can also be produced in other materials to meet higher or lower temperature requirements.

•

Cable Guard. (Fig. 110). This cable guard was developed by Butler Mfg. Co. for use in providing mechanical protection at points required on buried cable. It is in two half-sections, similar to split conduit, which may be firmly attached together by a special clamping tool to form a metal enclosure for the cable. The use of this device eliminates the need for cutting cable and running it through a metal pipe and then resplicing to provide mechanical protection.

Fig. 110. Cable guard.

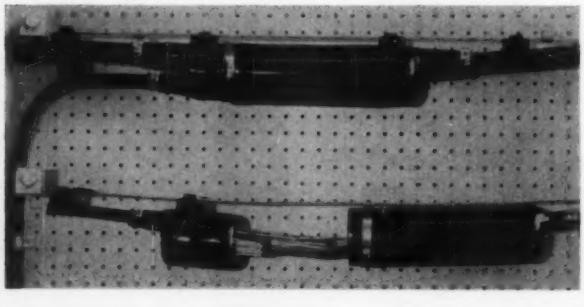
"Cableguard" is now available in a size suitable for protecting 1-inch cable. The manufacture of larger sizes is under consideration. It is constructed of hot-rolled 16-gauge steel, hot dipped galvanized.

•

Aluminum Covered Steel Wire and Strand. (Fig. 111). A completely new aluminum-covered steel wire and strand, called Alumoweld, has been developed by Copperweld Steel Co. Alumoweld represents the only successful application of a thick cladding of aluminum to steel by a controlled weld. Employing heat and pressure, this new process inseparably welds aluminum to steel so that the two metals act as one when the bimetallic rod is subsequently drawn into wire.

Fig. 111. Aluminum covered steel wire and strand.

Fig. 109. Cable slice case.



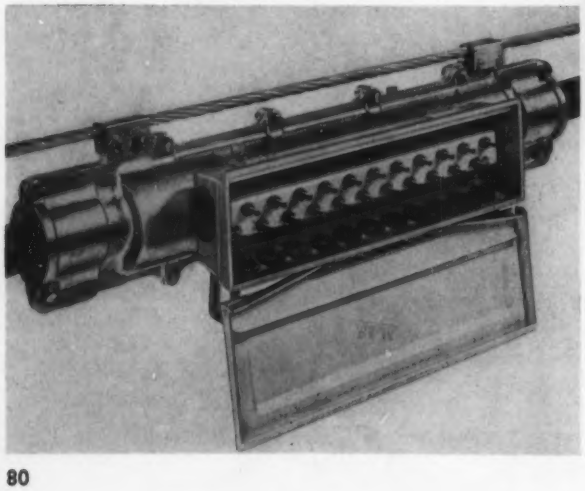


Fig. 107A. Splice case terminal.

(Please turn to page 103)

5696 IS A COOL NUMBER

FOR LIGHT LINE WORK, MAINTENANCE AND GENERAL SERVICE

5696 FEATURES

Mechanically operated derrick readily sets 35' pole

24' extension ladder available for overhead line maintenance

Galvannealed steel side compartments and understructure

Same tread plate floor used in larger line bodies

Compartments contain pull-out drawers, bins and thru box

Illustrating 24 ft. extension ladder pivoting on rear sheave bar with retaining sockets on rear bumper. Ladder can by used away from vehicle. Stored derrick is raised to work position in seconds by use of winch line and winch. Key locks on all compartment doors.

5696 BENEFITS

Moderately priced, extremely flexible in its work functions

Long service under rugged, every day operating conditions

Tool and materials needed for service work are readily accessible

Normal functions of light line job provided by winch and folding derrick

Backed by 66 years of Creative Engineering Service to the Public Utility Industry

CLIP AND MAIL...TODAY

BODY DIVISION
YORK-HOOVER CORPORATION
YORK, PENNSYLVANIA

Dept. 3T, York-Hoover Corporation
York, Pa.

Please send me a copy of Bulletin No. 946 covering your 5696 Combination Unit.

Name_____

Company_____

Address_____

City and State_____

COMPLETE ADVERTISING CAMPAIGN

(Continued from page 50)

of illustrations which can be used in its directory.

The institute also makes available "rate case," and "directory closing announcement" and other such typical subject advertisements.

The institute has been called upon to furnish special campaigns, at a nominal cost, not only in rate cases, but in instances where companies have unique public relations problems. It also has produced material for state associations, promoting the Independent industry in the specific states.

To implement an Independent telephone company's promotion job, the institute makes available with each package a four page bill insert called "Telephone Talk." This insert, provided to subscribing companies at low cost, has a powerful promotional impact.

Twice each year the institute offers special promotional billing envelopes. These come in a 6½ x 3⅝ inch size and the company has its choice of window positions. Available in six different styles, each with a different color illustration, they depict themes like: "Color telephones make your home as pretty as a picture," "How about an extra telephone for your home," "I have an upstairs telephone, too," "Long distance keeps you together," "Telephones keep the world within your reach, and "Are you a good party line neighbor?"

Exciting things are happening
...where Independent Telephone Companies are growing!
Where industry is on the march, for example. All part of the decentralization program which has spread America's "industrial heart" over the gentle green of the countryside. This new industrial revolution is bringing millions of people to the frontiers of economic growth . . . where their needs for telephone service are answered by independently owned and managed companies.
To keep pace, these telephone companies are adding to their facilities at the rate of a million dollars every day. In the 11,000 growing communities they serve, more than 10 million Independent telephones help you reach all America.
INDEPENDENT
Write for free booklet, "An American Story"—illustrated facts about America's Independent telephone industry. Address Dept. 894.
U. S. INDEPENDENT TELEPHONE ASSOCIATION, Pennsylvania Building, Washington, D. C.

This is one of the USITA national ads (in color) emphasizing the 1959 theme—"Exciting Things Are Happening Where Independent Companies Are Growing." These national ads appear in *Time, U.S. News & World Report* and *Farm Journal*.

Signs, Calendars, Etc., Offered

Also offered by the institute are advertising aids such as Scotchlite signs, pocket calendars, poster and card frames. In addition, several other items are in the development stage, to be offered if there is enough subscriber interest.

Besides providing local down-to-the grass-roots advertising, the TAI also participates in the USITA national advertising program by distributing both to members and non-members of the institute, material which ties in with national advertising.

The national advertising tie-in ads are available through membership in the United States Independent Telephone Association.

Packages of tie-in material, also mailed every two months, emphasize the fact that advertising campaigns must be unified. They help companies provide a one-two punch in their advertising by tieing in the USITA national advertising with their local advertising.

USITA National Advertising

The need for a national Independent industry advertising program had been discussed for years, when, in 1953, the USITA appointed a special advertising task force to investigate the possibilities of raising sufficient funds for such a program and to select the agency to administer it.

The late J. M. Mathes, New York advertising agency executive, in an article published in TELEPHONY summarized the USITA's feelings by saying: "(The Independents of this nation) can no longer afford to be a ghost industry. . . . As we gain national identity and recognition, we gain public support against unjustified federal, state and municipal encroachments on our function as soundly managed, privately financed public utilities."

Also, in a statement published in TELEPHONY, Clyde Bailey, USITA executive vice president said: "Today there is not one person in 25 who knows there is such a thing as an Independent telephone company to say nothing of an Independent telephone industry."

The USITA task force's recommendation that a national advertising program be formulated was approved by the USITA's board of directors at the association's 1953 convention. The agency chosen to handle the program was J. M. Mathes, Inc., which then

HENKELS & McCOY

PHILADELPHIA

Professional Engineering and Construction Services

- Area coverage surveys and mapping. Area coverage design — line staking.
- Outside plant construction, including cable plowing, and underground duct, cable pressurizing and maintenance.
- Central office switchboard, carrier, microwave installation. Modification and maintenance.

Skilled Personnel

Good Supervision

Nation-wide Service

Performance has built our business

Information and estimates promptly given.
Write or telephone us regarding your requirements.

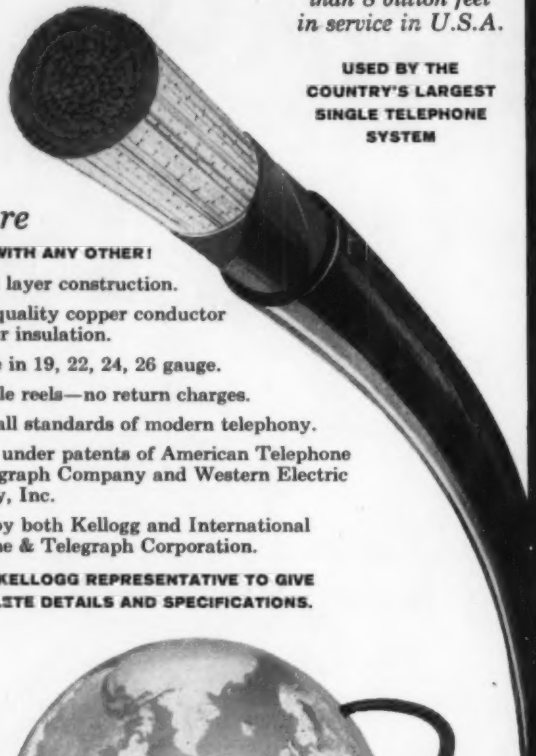
HENKELS & McCOY
1800 Johnson St., Elkhart, Ind. · Telephone: 3-2915

ITT CABLE

for dependable, lifetime service

Proven by more than 8 billion feet in service in U.S.A.

USED BY THE COUNTRY'S LARGEST SINGLE TELEPHONE SYSTEM



Compare

ITT CABLE WITH ANY OTHER!

- Unit and layer construction.
- Highest quality copper conductor and paper insulation.
- Available in 19, 22, 24, 26 gauge.
- Disposable reels—no return charges.
- Exceeds all standards of modern telephony.
- Licensed under patents of American Telephone and Telegraph Company and Western Electric Company, Inc.
- Backed by both Kellogg and International Telephone & Telegraph Corporation.

ASK YOUR KELLOGG REPRESENTATIVE TO GIVE YOU COMPLETE DETAILS AND SPECIFICATIONS.

KELLOGG
CHICAGO, ILLINOIS
Communications Division of ITT

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Ill. Communications division of International Telephone and Telegraph Corporation.

For complete list of offices, see pages 6-7.

First page of a "tie-in" bill enclosure of the USITA national ad (shown in an accompanying illustration) which are available to Independent companies for mailing to subscribers.

embarked on a campaign of letting the country know about the Independent industry.

The program is designed to aid Independent companies in their efforts to:

(1) Obtain needed capital for plant expansion.

(2) Keep service rates at profitable levels.

(3) Develop revenues from new services.

(4) Attract and retain qualified personnel.

(5) Maintain favorable public relations, both nationally and locally.

This program is geared to reach investors, regulatory commissions, subscribers, employes, and civic-minded people.

USITA national ads have been published in *Time, U. S. News and World Report, Farm Journal,* TELEPHONY and *Telephone Engineer and Management.*

Tie-in Material Used

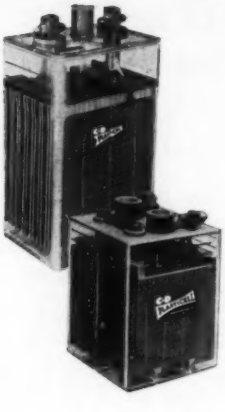
USITA national advertising tie-in material, distributed by the Telephone Advertising Institute, consists of kits covering mats of two national ads, in two sizes, 2 col. x 8 inches, and 3 col. x 10 inches. They also contain a sample bill insert. This insert, as well as additional mats, can be ordered by

(Please turn to page 87)

WHERE ELSE

can you get batteries that give you all these features?

1. **Full .266" thick plates (not just .156" or .220")**
2. **Triple insulation (not just dual)**
3. **14-year (PlastiCell)* or 25-year (PlastiCal)® life in full float service**



Get the full story—

Bulletin T-532:
"C & D PlastiCal® Batteries For The Communications Industry"

Bulletin T-533:
"C & D PlastiCell Batteries For The Communications Industry"

Comprehensive new battery bulletins detail outstanding C & D construction advantages . . . give complete rack data . . . display the full lines of C & D PlastiCell (10 to 1680 A.H.) and PlastiCal (50 to 1680 A.H.) telephone batteries. *Write for your copies today.*

Only from C & D!

Thickest, heaviest plates in the industry pack extra capacity, extra life! They are wrapped in woven glass mats, perforated vinyl retainers and have microporous plastic or rubber separators . . . active materials just can't shed away.

That's what you get in C & D PlastiCell* and PlastiCal® telephone batteries. PlastiCell lead-antimony grid batteries are built to give you full 14-year life. Advanced PlastiCal *lead-calcium* grid batteries: 25 years. And PlastiCals require watering less than *once a year!*

Add the advantages of C & D suspended and supported plate construction, *Hi-Impac* covers, transparent, high-heat resistant plastic containers, Plastite Post Seals, and Saftee-Vents . . . and you know why telephone men say: "C & D is your better battery buy."

C&D

Since 1906

C & D BATTERIES, INC.

of Conshohocken, Pa. . . . Attica, Ind.

Sales and Service Offices in Principal Cities from Coast to Coast

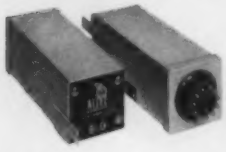
Manufacturers of Dynu-Clad® Industrial Batteries • PLASTICELL® and PLASTICAL® Batteries for Communications, Control and Auxiliary Power • Producers of Autolay® Silicon Chargers

*Trademark

ALTEC TELEPHONE EQUIPMENT

Compact · Versatile · Easy to Service

The advanced design of ALTEC telephone equipment makes it ideal for modern telephone systems. In addition to its reliability and high standard of performance, ALTEC equipment requires a minimum amount of space. Inherent flexibility makes it useful in a wide range of applications. Easy maintenance is designed in to save time and money in servicing.



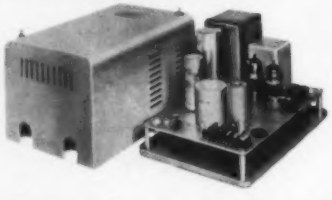
447A TRANSISTOR AMPLIFIER
Telephone Repeater Type

Directly interchangeable with vacuum tube repeaters; dimensions are identical. Requires only 24 - 48 volts. Eliminates need for 130v supply.

SPECIFICATIONS:
Type: Repeater Amplifier (transistorized) • Gain: 37 db from and into 600 ohm loads • Power Output: +18 dbm (at +10 dbm distortion is 1.5%, 300-3000 cps) • Frequency Response: −1 db at 200 and 5000 cps referred to 1000 cps • Input Impedance: 600 ohms • Output Impedance: 600 ohms • Output Noise Level: −70 dbm • Controls: Input volume control which varies gain from −2 db to maximum gain • Power Required: 17 - 24 v (50 ma @ 20 volts) • Transistors: 1 − 2N191, 1 − 2N188A • Dimensions: 1¾" x 1¾" x 6" • Color: Cadmium plate with dichromate finish • Weight: 14 oz. • Mounting: 11 pin Amphenol 86 CPN plug • Monitor Tap: Auxiliary output winding 11 db below 600 ohm winding available at test jacks on front panel and at connector pins at rear of unit • Accessories: Panel for rack mounting 10 repeaters; Rack mounting power supply capable of energizing 100 repeaters; Equalizer; Panel for mounting up to 10 equalizers; Assembly for mounting a 447A in 105B apparatus box.

444B AMPLIFIER
COMPRESSION TYPE

Compression, attack and recovery times are fixed quantities providing optimum performance for message use.



SPECIFICATIONS:
Type: Compressor Amplifier • Gain: 600 ohm input: 70 db • Bridging input: 57 db bridging 600 ohm line • Maximum Compression: 35 db change in input results in 15 db change in output • Power Output: 34 dbm at 30 db compression; 35 dbm with rectifier tube removed • Frequency Response: −2 db at 100 and 3000 cps relative to 1000 cps; More than 10 db down at 10,000 cps • Input Impedance: 600 ohms balanced and 12,000 ohms balanced for bridging • Source Impedance: 600 ohms • Load Impedance: 4 and 600 ohms • Noise Level: 80 db below rated output; −115 dbm equivalent input noise • Power Supply: 117 volts, 60 cps, 30 watts • Tubes: 1 − 6BC8, 1 − 6AL5, 2 − 12BY7A • Dimensions: 9" x 6" x 5" • Weight: 7½ lbs. • Attack Time: 50 milliseconds • Recovery Time: 1 second for 63% recovery • Harmonic Distortion: At 33 dbm output, less than 5%, 200 - 4000 cps; At 30 dbm output, less than 2%, 200 - 4000 cps.

5-17B PROGRAM
AMPLIFIER SYSTEM

Cabinet houses two program-quality 437B amplifiers capable of multiple tandem operation, two 17224 equalizers, and two jack fields to facilitate testing, equalizing, and monitoring. Each amplifier contains its own AC power supply and mounts in the cabinet independently on a plug-in basis for easy replacement and centralized maintenance.

SPECIFICATIONS:
Output Power: +24 dbm • Distortion: not over ½% THD (30 - 15,000 CPS at +24 dbm) • Gain: at least 44 db; adjustable to minimum of 8 db • Gain adjustment: 2 db steps and 1½ db vernier • Frequency response: ±1 db, 20 - 20,000 cps • Equiv. input noise: −115 dbm • Input impedance (internal): 150/600 ohms ±5% • Output impedance (internal): 150/600 ohms ±5% as measured at output of the bridge • Longitudinal balance of input circuit and output circuit with 600 ohm connection: 55 to 60 db at 40 and 15,000 cps; 70 db at 1000 cps • Tubes: 1 − 12AY7, 2 − 12BY7A • Electrolytic condensers: Sprague 17D or equivalent • Transformer insulation: 1500 volt insulation between primary and secondary windings • Impendance change simply accomplished by reversing the impedance plug. Occupies 9⅜" of 19" rack space.

For complete information about ALTEC telephone and paging equipment call Graybar.

Famous for Quality and Dependability

ALTEC LANSING CORPORATION
1515 S. Manchester Ave., Anaheim, Calif.

12-59

PAGE WIRE

—now offers

ACCO *Aluminized* Telephone Wire and Strand

Here are two new examples of PAGE'S pioneering leadership—the same kind of leadership that earlier was responsible for the development of Stainless Steel Strand, and was instrumental in developing Stainless Steel Lashing Wire:

1 • Our new ACCO *ALUMINIZED* Telephone Wire, combining the strength of steel with the corrosion-resistance of a bonded coating of aluminum. Available in these grades: Best Best (BB); Grade 85; Grade 135; Grade 190 (Support Wire) and Steel Construction Wire.

2 • Our new ACCO *ALUMINIZED* Steel Strand, also with a bonded coating of corrosion-resisting aluminum. Made in 3-, 7- and 19-wire construction. Available in Common, Siemens-Martin, High Strength, Extra High Strength and Utility grades.

We consider the unique aluminized coating of these wires to be superior to Class C galvanizing—in longer service life under virtually all conditions. Yet, with all their advantages, you can buy them at *much lower prices!*

***For full details,** see your Telephone Supply Distributor —or write our Monessen, Pennsylvania, office.*

Page Steel and Wire Division
AMERICAN CHAIN & CABLE

ACCO

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Bridgeport, Conn.

SAVE! Arrow's T-25 Staple Gun Saves You Time and Money!

For Wire Up To ¼" in Diameter . . . Bell, Thermostat, Radiant Heat, Telephone, Inter-com, Burglar Alarm, etc.

Tapered striking edge gets into tight corners!

T-25 AUTOMATIC STAPLE GUN *for wires up to 1/4" in diameter. Uses 3/8", 7/16" and 9/16" round crown staples, galalloy coated for high rust resistance.*

LIST $15.

SAFE!
Can't damage wire because staples automatically stop at right height! Won't even break ¼" hollow glass tubing.

FAST!
Proved by test 6 times faster than old hammer method. Saves you 70% in fatigue and efficiency . . . saves many dollars a year.

HOLDS!
New staples get tremendous holding power from tack points that spread to lock themselves into wood!

Write for catalog and information.

ARROW FASTENER CO., INC.
ONE JUNIUS STREET, BROOKLYN 12, N.Y.

using a reply card enclosed with each kit.

In 1958 alone, 704,216 bill inserts and 1,146 additional mats were ordered.

The tie-in material is helpful to companies because it identifies them with the USITA national advertising campaign and adds thousands of readers to the circulation of these national industry messages. These messages are then concentrated in the company's community over the company name. It doubles the advertising impact since both national and local versions are seen.

A variety of subjects are featured in the USITA national advertisements. In the beginning, the advances in telephone practice such as the dial telephone, selective ringing, and handset telephones developed by Independent manufacturers were shown.

Some ads have been designed for merchandising, such as the one that shows a couple lounging on the terrace and making use of their terrace telephone, another sells extensions by asking a startled man "How far are you from a telephone . . . right now?" Color comes in for its share of attention as in the ad that shows a color telephone in an office setting.

Investors Attracted

Investors have been attracted through ads such as the "Big Picture" which depicts an average family and tells how they are served through the Independent telephone industry. "Frontier Wagons . . . 1958" educated readers as to the Independent's part in the service investment in the future by showing a lineman and a truck enlarging telephone communications.

In addition, last year a special ad explaining the 10 per cent excise tax made its appearance.

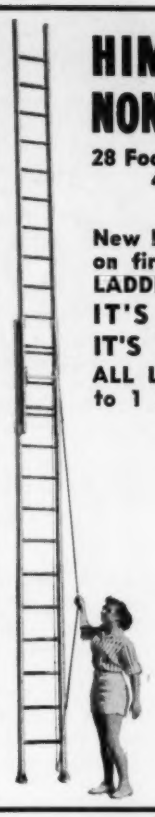
1959 Theme

The USITA Advertising Program for 1959 has as its theme "The Exciting Story of Growth." It is summed up in the running headline, "Exciting Things Are Happening. . . . Where Independent Telephone Company's Are Growing."

This is a "grass roots" program dealing with the broad areas the Independent industry serves rather than with specific communities, either large or small. It is believed that for this reason it represents the small telephone company equally as well as the large.

The bill inserts offered are four pages. They have as a front cover the illustration from one of the two national ads with the ad's copy on the inside.

Recently, a mail survey was made of the 1,200 Independent companies re-



HIMCO THE ONLY LIGHTWEIGHT NON-CONDUCTIVE Fiberglass Ladder

28 Foot Extension 49 lbs. 24 Foot Extension 45 lbs. 20 Foot Extension 38 lbs.

All Ladders Complete

New Pat. Pend. RUNG LOCK for fast action. Lock snaps on first rung when rope is released. NO RUN-AWAY LADDERS.

IT'S SAFE—IT'S STRONG AND DURABLE
IT'S LIGHTWEIGHT AND EASIER TO HANDLE

ALL LADDERS are TESTED and GUARANTEED with a 4 to 1 safety factor (U. S. Standard of Ladders Test).

HIMCO THE ONLY LADDER BUILT WITH YOUR LIFE IN MIND

Write for Free Catalog

PAT. 2776080, OTHER PATS. PENDING
FIBER **HIMCO** GLASS
TRADE MARK
SAN RAFAEL, CAL.

Unconditionally Guaranteed

HOPFELD INDUSTRIAL MFG. CO.
738 A St., P.O. Box 54 • San Rafael, Calif.

HOW DO AUBURN TRENCHERS CUT THE PRICE of a GOOD DITCH?

- Low Initial Cost
- Less Maintenance
- Less Downtime
- One-man Operation
- Speed on the Job

When you see how the Auburn digs in soil conditions that no other trencher can, operates up to 800 feet per hour, and automatically adjusts speed to changing soil conditions, you'll understand why so many dollar-wise users buy Auburn. It has a simple, trouble-free design that has been proven through years of service.

Trenches 6 to 14 inches wide and down to 6 feet. Special bits are available for rock, shale, and frozen ground.

WE TRENCH THE EARTH

Auburn is the world's largest producers of trenchers.

AUBURN GEAR-DRAULIC

Tractor-mounted trenchers are available for M-F Work Bulls, IH Utility, John Deere Crawler and Wheel Industrial, and Ford Tractors.

Jeep A-Trench GEAR-DRAULIC

the original Jeep-mounted trencher, and only trencher approved by Willys Motors. Available at Jeep Dealers.

WRITE FOR COMPLETE INFORMATION and DEALER'S NAME

AUBURN MACHINE WORKS, INC. AUBURN, NEBRASKA, U.S.A.

ceiving tie-in material. From the more than 11 per cent of the questionnaires returned, it was found that better than four out of five companies replying use tie-in mats, more than half use bill stuffers, and all but eight of the respondents wished to continue receiving the material.

Each national ad, with the exception of the "excise tax" ad has been reprinted as a folder bearing either a *Time* or *U. S. News & World Report* cover. One of these folders is mailed to every member company of the USITA. This folder also offers free color reprints of the ad as well as newspaper mats and bill stuffers.

During 1958 requests for more than 90,000 reprints of national ads were filled. Operating companies post these reprints on bulletin boards, distribute them among employes and mail them to subscribers and stockholders.

Approximately 3,500 reprints of each ad are included in periodic mailings of industry information such as reprints of speeches, articles, statistics, etc., to financial analysts throughout the country.

In the past, the local and USITA national advertising programs have been directed by two separate committees—one, the USITA Advertising Committee, which has worked with Telephone Advertising Institute, and the other, the USITA National Advertising Committee, which directed the national program. However, these committees were combined in December, 1958 and the new committee will direct both the local advertising and national advertising programs.

Members of the new USITA Advertising Committee are C. C. Pearce of Riceville, Ia., chairman; L. D. Densmore of Lincoln, Neb.; L. W. Hill of Tarboro, N. C.; Paul H. Kaufman of Bellevue, O.; George P. Norton of New York City, and R. L. Post of Brownwood, Tex. R. C. Reno and the late Ray W. Smith, both of Chicago, Ill., served as technical advisors.

IN THE NATION'S CAPITAL

(Continued from page 21)

At this point, the telephone rang and a waspish voice wanted to know something about Western railroad rates, and please hurry it up and get the lead out! He had the wrong number, of course. I knew he wanted the Interstate Commerce Commission. Do you think I'd give him the satisfaction of the helping hand? The right steer? The friendly hint? Not me. I just said "I dunno—woof, woof" and hung up. It's all yours, Mr. Schwartz!

New Bill in Congress

Representative Harris (D., Ark.) has introduced a bill in the House of Representatives to regulate subscription television via telephone or other wire equipment. Harris, chairman of the House Interstate & Foreign Commerce Committee, said the bill was simply to put wire TV on the same plane as radio frequency TV, from the standpoint of Federal Communications Commission control.

At present the commission has no authority over television operations which use wires as distinguished from radio frequency in transmission. The real point at issue, however, is the possibility that the proponents of subscription television might resort to wire TV in an effort to break out of the stalemate resulting from FCC delay and congressional uncertainty over permitting even tests to be made of pay television.

Representative Harris' bill is likely to get a favorable reception in view of his explanation that "you cannot have uncontrolled tests of pay television by wire if tests of pay television by radio

PROVED
BEST for bus terminals
the BN Booth
attracts the eye day or night,
promotes more revenue. Colorful, clean, sturdy—
the BN Booth is best for you, too!
For full particulars, consult your distributor or write direct for folder... Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.
a B-N booth is a busy booth!

are subject to strict limitations prescribed by the FCC." There is a constitutional question involved, however, as to whether Congress has any right to legislate with respect to local communications moving by closed wire circuits which do not cross state lines.

Bell Files Revised TWX Rates

Bell System telephone companies on Apr. 17 filed with the Federal Communications Commission new schedules of rates for interstate private line telephone and teletypewriter services which would result in a net reduction of 1¼ million dollars a year to customers. The new schedules, proposed to be effective May 17, would bring all Bell System private line interstate charges to the same level as rate modifications made last year by the Long Lines Department of the American Telephone & Telegraph Co.

More than 70 per cent of the customers involved either would receive rate reductions or would not be affected by the change. Increases of less than 5 per cent a year would apply to most of those customers whose rates would be increased.

NINE REA LOANS

(Continued from page 30)

improve service for its 1,766 subscribers, and furnish initial service to 1,246 subscribers. The Pocahontas company provides automatic, common battery and magneto service through exchanges at Cass, Frankford, Hillsboro and Marlinton.

Construction planned by the borrower includes new automatic central offices at Frankford, Hillsboro, Marlinton, and Arbovale. The Cass community will be served from the Arbovale exchange.

REA loans to Telephone Utilities now, totaling $3,067,000, will enable it to furnish new and improved service to 5,587 subscribers. The completed system will consist of eight automatic central offices.

Harold G. Payne is president of Telephone Utilities of West Virginia and E. Ames Campbell is manager.

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"Unless you do advertising the way you see it and feel it, it comes out without any real blood and bones in it. But if you'll be yourself, write like yourself, think like yourself, and then measure your ads when they're done as to whether they turn out to be like people—nice people you'd like to have as friends—chances are you'll be creating advertising that's awful darn good." —GEORGE GRIBBIN, *president, Young & Rubicam, Inc.*

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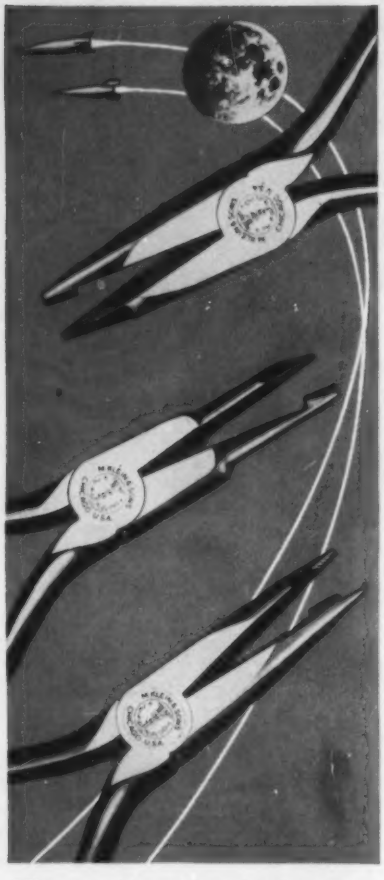

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No. 260-6—length 6⅜"
No. 260-6C—with coil spring that holds jaws open.

NEEDLE-NOSE PLIER

Similar to No. 260-6 but nose has been slimmed to permit use in confined areas. Patent pending.
No. 261-6—length 6⅜"
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PLIER WITH KNIFE AT TIP

Jaws behind blade hold clipped wire end A shear-cutting plier that will cut hard or soft wire. Coil spring to keep jaws apart. Pat. No. 2,848,724.
No. 208-6PC—length 6⅜"

Write for Catalog 101-A, which shows the complete line of Klein Pliers, including 20 pliers recently developed.

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Courts and Commissions

Tenn. Independent Granted Raise For Dial Service

The Parsons Telephone Co. on Mar. 26 was granted rates which will produce $114,119 in annual revenue by the Tennessee Public Service Commission. Originally the company had requested rates which would have given it revenues of $126,481.

This represents a 2.9 per cent return on the company's rate base of $834,063.

The company is presently converting its exchanges at Sardis and Decaturville to automatic operation. When conversion is completed the company estimates it will be serving 1,683 subscribers. After these conversions, the company's rate base will increase from $648,893 to the $834,063 figure.

Under its old rates, the company would have experienced a net loss of $11,957.51 on gross revenue of $101,-002.20.

Automatic rates are as follows:

One-party business	$7.00
Two-party business	6.00
Four-party business	5.00
Eight-party business	5.00
One-party residence	5.75
Two-party residence	4.75
Four-party residence	3.75
Eight-party residence	3.75

Current Operation Figures Ruled Out in Ala. Rate Case

The Alabama Public Service Commission on Apr. 10 ruled that Southern Bell Telephone & Telegraph Co.'s request for higher rates, which has been under litigation for the past four years, must be based on conditions existing before 1954 (TELEPHONY, Feb. 28).

The commission rejected the company's contention that earnings and operating costs from 1954 through 1958 should be considered in fixing a fair rate of return.

The company, in June 1954, was granted a temporary increase averaging nearly 5 million dollars annually, but all proceeds from the increase were ordered set aside pending final settlement.

In a later action, Montgomery Circuit Judge Walter B. Jones granted the increase as a permanent rate structure but the Alabama Supreme Court overruled him. The high court said that only the commission can determine rates.

The supreme court instructed the commission to go back into the matter and fix a proper rate schedule.

Southern Bell, in this latest phase of the case, had tried to get testimony into the record about conditions existing between 1954 and 1958. It was this testimony which was ruled inadmissible.

Frank Newton, Southern Bell vice president and general manager for Alabama, said that the company's request was based on three grounds:

(1) That the supreme court in a previous ruling on a telephone rate case set the precedent for bringing in up-to-date testimony.

(2) The courts have held uniformly that the latest available information must be considered in computing rates.

(3) Refusal to consider conditions since 1954 would "put an artificial blindfold on the commission and would result in an order based on pure prophecy."

Ask Court to Reconsider Franchise Ruling in Cal.

San Francisco City Attorney Dion Holm asked the California Supreme Court on Apr. 1 to reconsider its decision that the city cannot collect franchise payments from the Pacific Telephone & Telegraph Co. (TELEPHONY, Apr. 11).

On Mar. 17 the state's high court ruled that the Pacific T&T needed no municipal permit because it already has a state franchise. The ruling automatically bars the city from collecting a franchise tax from the company.

The state supreme court said in its March decision:

"We are of the opinion that the construction and maintenance of telephone lines in streets and other public places within the city is today a matter of state concern and not a municipal affair."

Involved is the nearly $1,200,000 collected annually by the city from the company (until 1956, when the local franchise expired), and the free use of 1,000 telephones, as well as special trunks for police and fire department communications.

San Francisco attorneys contend that the high court's Mar. 17 ruling is in violation of the California constitution because it makes a gift of the city's streets to the telephone company.

Pending the outcome of court proceedings, Pacific T&T's bills for San Francisco's 1,000 cost-free telephones have gone unpaid.

Urge Passing on Accelerated Depreciation Savings in Cal.

Utilities in California using the accelerated depreciation provision of the federal income tax code have been urged by the staff of the California Public Utilities Commission to pass the so-called tax savings on to their subscribers (TELEPHONY, Aug. 23).

These savings would result from the code provision allowing utilities to depreciate the value of assets more rapidly by means of an accounting device called accelerated depreciation.

The statement of position by the commission staff was given by Stewart Weber, supervising utilities engineer. Mr. Weber appeared as a witness as the commission considered a proposal by some California utilities that they be allowed to keep money gained from using tax normalization.

Asserting that rates should be based on actual tax costs and not upon speculative future costs, Mr. Weber said utilities would use the savings to buy new equipment on which still more fast depreciation tax deductions could be claimed in a never-ending process.

Utilities argue that their income taxes in future years will be all the higher if they use up deductions from fast depreciation at present. They say these write-offs are merely tax deferrals.

Party Line Tie-Up Delays Help; Cal. Man Dies

For 17 minutes after her husband suffered a heart attack on Apr. 9, Mrs. Emma Dobert of San Carlos, Cal., pleaded for a party line before the user would relinquish it, she told police.

Firemen reached William Dobert, 66, just four minutes after his wife's call got through, but he was dead.

San Carlos police are investigating Mrs. Dobert's complaint because failure to relinquish a party line in an emergency is a misdemeanor under California law.

Give Subscribers Choice on Color Charge in Kentucky

The Kentucky Public Service Commission on Mar. 25 approved a revised tariff for colored telephones filed with it by the General Telephone Co. of Kentucky.

In an order approved on Dec. 15, 1958, the commission had directed the company to charge a 25-cent monthly rental charge for these instruments and

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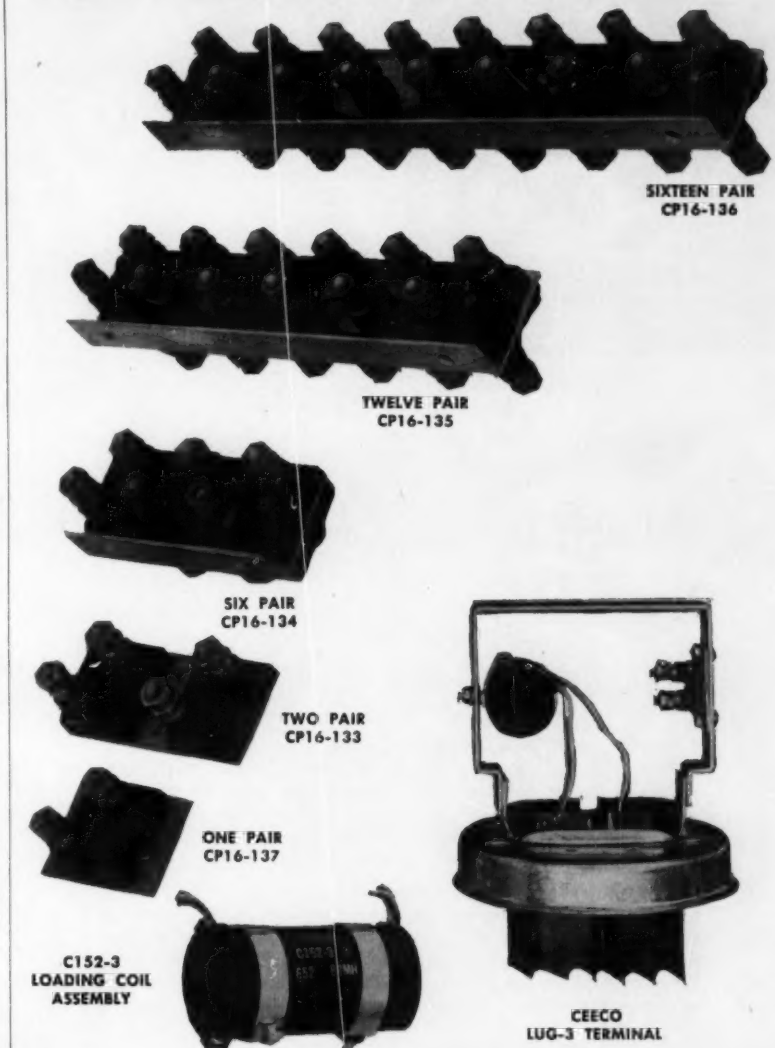

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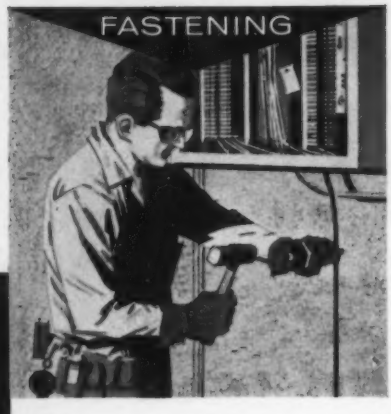

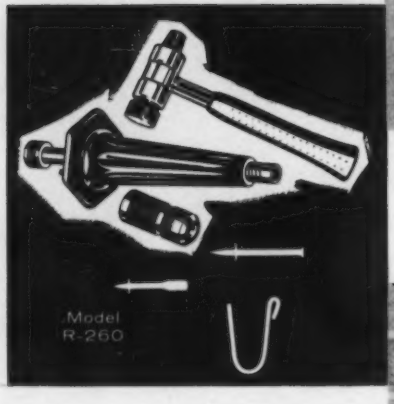

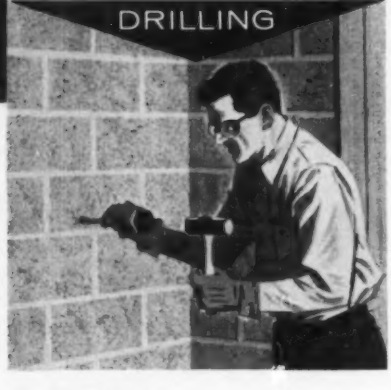

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to refund the $7.50 installation charge paid by these subscribers.

The new tariff has the following provisions:

(1) Subscribers, who prior to Dec. 15, 1958 had paid the non-recurring charge of $7.50 for color instruments will be permitted to retain the color telephone without any further payment, or they may elect to have the $7.50 refunded and then pay a 25-cent monthly charge.

(2) Subscribers who may have already cashed the $7.50 refund check may elect to return the refund and continue on the original basis.

Those affected have until June 1 to make a choice.

Customers whose telephones were installed after Dec. 15, 1958 will be billed on the 25-cent monthly basis.

SW Bell Sues in Texas To Obtain Rate Raise

Southwestern Bell Telephone Co. on Mar. 31 filed suit in Texas' 105th District Court to prohibit the city of Corpus Christi from interfering with a rate increase for the city's subscribers.

The suit did not specify rates, but the company is reportedly seeking $1,571,000 it originally requested in early 1958 from the Corpus Christi city council. (There is no state utility regulatory commission in Texas. Each city or town council has jurisdiction over the rates for utility services in respective municipalities.)

Corpus Christi councilmen on Apr. 1 again approved rate increases that would give Southwestern Bell $228,000 more in revenues. The councilmen reportedly had been notified earlier that day that the matter might be taken out of their hands.

Southwestern Bell asked the district court to grant a temporary injunction preventing the council from interfering with its proposed rate increase.

The case was to have been heard on Apr. 6. If Bell won, it could immediately charge its requested rates. A later court decision would set the final rates.

Only if Bell lost or dropped the suit could the city council's action of Apr. 1 have any effect on setting the final rate.

The city's rate authorization was for an increase in paystation rates. The company sought raises also in business and residence service.

Ask Purchase in Arkansas

The Arkansas Public Service Commission was asked on Mar. 31 to approve the sale of the West Fork Telephone Co. to the White River Telephone Co. of Elkins. The White River company also asked to sell $3,500 worth of stock.

West Coast Telephone Co. Asks Increase in Wash.

The Washington Public Service Commission was to have heard on Apr. 20 the request of the West Coast Telephone Co., Everett, for a rate raise.

On Feb. 16 the commission granted the company an increase of $535,240, about one-third of what the company had requested (TELEPHONY, Mar. 7).

The company contends that the increase will not produce the results intended by the commission, according to West Coast's vice president and general manager, L. Grey Beck.

The company filed a revised tariff with the commission at the end of March. It had filed a request for a hearing on Mar. 13.

Approve Ownership Change, Ask Two Sales in Nebraska

The Nebraska Railway Commission on Apr. 14 approved the transfer of the controlling interest in the Farmers Independent Telephone Co., Red Cloud, from Grace Wolf to Francis P. Darnold of Hastings (TELEPHONY, Apr. 11).

The commission also set a May 13 hearing date on the application of the Capitol Telephone Co., Hickman, to purchase the properties of the Eagle Independent Telephone Co. and the Alvo Telephone Co.

Wisconsin Telephone Co.'s Purchase Case Before FCC

The Federal Communications Commission on Apr. 24, was to have heard oral arguments in the Wisconsin Telephone Co.'s proposed acquisition of the plant and properties of Menomonee Falls Telephone Co. and the Lisbon Telephone Corp.

In earlier action, the FCC examiners approved the purchase (TELEPHONY, Sept. 27, 1958).

Report Sale of Seven Exchanges in Missouri

The Worth Mutual Telephone Co. of Gentry, Mo. was sold on Mar. 20 to the Grand River Mutual Telephone Co. (TELEPHONY, Aug. 2).

Included in the sale were the Lone Star, Gentry, Denver, Parnell, Darlington, Alanthus, and Worth exchanges.

The Missouri Public Service Commission recently awarded a franchise to the Grand River Mutual Telephone Co. to serve the area formerly served by Worth Mutual.

Ask Operating OK in Ill.

A hearing before the Illinois Commerce Commission was to have been held on Apr. 23 on the application of

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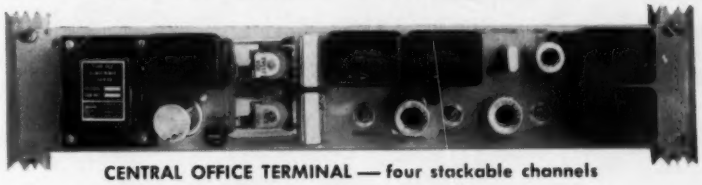

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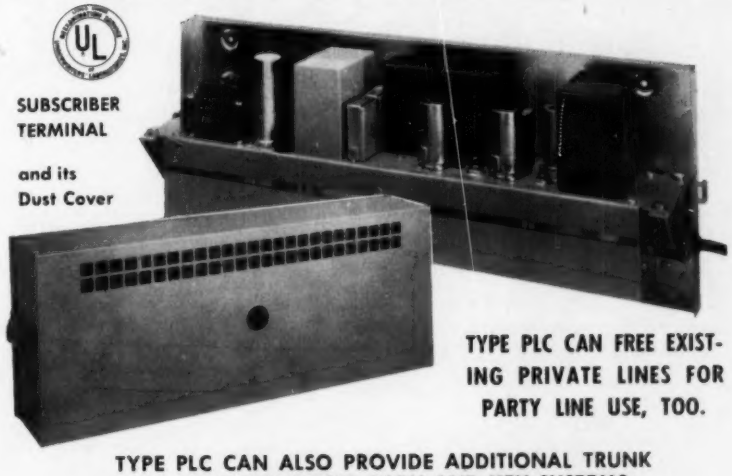

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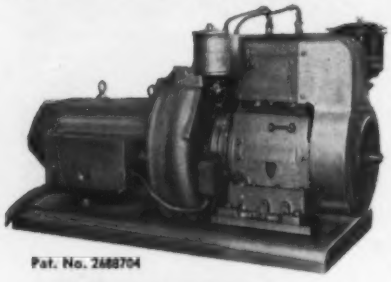

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the Hardin County Telephone Co., Inc. The company seeks to obtain a certificate of convenience and necessity to operate a telephone company in and near the village of Eddyville.

C&P of Md. Seeks Raise Based on New Valuation

Chesapeake & Potomac Telephone Co. recently asked the Maryland Public Service Commission to approve a rate raise based on a new valuation of the company's assets.

Prior to the company's request, People's Counsel Wilfred T. McQuaid told the commission that the C&P company should return some 6 million dollars which he said it had made over its authorized income in 1958. He said that the refund was based "unlawfully" on a higher rate of return than allowed by a commission decision handed down in February 1958.

A company vice president, W. Griffin Morrel, denied Mr. McQuaid's allegation.

The new petition represents an entirely new case, a company spokesman said.

General Telephone of SW Reports Raises in Texas

The following rate increases became effective in three Texas exchanges of the General Telephone Co. of the Southwest during the month of March, 1959.

Gunter, automatic, 195 stations, on Mar. 1:

	Old	*New*
One-party business	$7.00	$9.00
One-party residence	4.50	5.00
Four-party residence	3.25	3.75

Hubbard, common battery—manual, 611 stations, on Mar. 6:

One-party business	8.50	9.75
Two-party business	7.00	8.00
One-party residence	4.75	5.25
Two-party residence	4.00	4.25

Buda, magneto-manual, 196 stations, on Mar. 26:

One-party business	6.00	6.75
One-party residence	3.50	4.00
Two-party residence	3.00	3.50

South Dakota Cooperative Files for Incorporation

The Corson Cooperative Telephone Co., of McLaughlin has filed articles of incorporation with the South Dakota Secretary of State, it was reported on Apr. 4.

The company was capitalized at $500,000.

Incorporators are Otto Schneider, August Wolfe, Eugene Stocker, Leo Rau and Loyd Knudson, of McLaughlin; Lawrence Mastel of Trail City, and Alvin Rieger of Wakpala.

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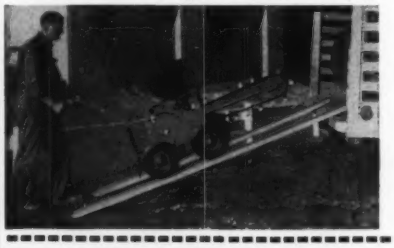

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Sale of Tennessee Company Has Been Completed

The Cities Telephone Co. of Chapel Hill, Tenn., has purchased the Fosterville Mutual Telephone Co., Manager Wilmon Varnado of the Chapel Hill company announced on Apr. 3 (TELEPHONY, Jan. 17).

Frank R. Clark, former owner of the Fosterville company, will continue to manage the exchange until its conversion to automatic operation about February, 1960. Permission for the transfer was given by the Tennessee Public Service Commission on Mar. 5.

Southwestern Bell Gets OK For New Rates in Texas

City councilmen of Waco, Tex. recently authorized Southwestern Bell Telephone Co. to increase its revenues there by $259,000 a year "to earn a fair return" on its investment. New rates were in effect for Waco subscribers on Apr. 1.

The new schedule of rates compares with the old as follows:

	Old	*New*
One-party residence	$ 4.75	$ 5.00
One-party business	11.00	13.00
Rural business	8.00	9.50

The paystation rate also was increased to 10 cents.

Government Seeks Buyer For Virgin Islands System

The United States Department of the Interior on Apr. 8 announced it is accepting proposals for the purchase of the Virgin Islands Telephone System.

Director Anthony T. Lausi of the department's office of territories said the Virgin Islands government is offering tax concessions during the development period needed to expand the system. The territorial government now operates the system.

"The growing increase in tourists to the Islands, plus the notable increase in permanent residents, holds the promise of a very successful telephone operation," Mr. Lausi said.

"This improvement project," he continued, "has wide support among the Island residents and visitors. It has the enthusiastic backing of the territory's governor and legislature. We expect a hearty response to this solicitation and we are fully confident the project will be successful. It will provide not only a stimulant to the economy of the Islands, but also a great satisfaction to the Islanders and their visitors."

The present antiquated system cannot provide satisfactory service, he added. "The visitors and new residents are

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justified in expecting modern telephone service at reasonable rates," he said. "Private enterprise is best equipped to do the job."

The Virgin Islands legislature has authorized Governor John D. Merwin to solicit proposals for private capital. Governor Merwin has appointed an evaluation board to study the proposals and recommend the one with the most advantages for the Islands.

Mr. Lausi said the office of territories and other federal agencies assisted Governor Merwin in preparing a booklet describing the proposal to sell the system. The Virgin Islands Public Utilities Commission has adopted regulations which will govern operation of the new system, and the regulations are included in the booklet.

Proposals will be received by the Office of Territories until 2 p.m. (E.S.T.), June 12, 1959. The sealed proposals should be addressed to the Office of Territories, Room 6514, Department of the Interior, Washington 25, D. C. Copies of the booklet are available at the same address.

Illinois Issues Charter To Independent Company

The state of Illinois has issued a charter to the Sucker Telephone Co., Mill Shoals, it was announced on Mar. 30.

Incorporators are Stanley J. Adams, Charles O. Puckett and Charles A. French.

There are about 60 subscribers at present.

Ask Raise in Wisconsin

The Wisconsin Public Service Commission on Apr. 24, was to have heard the application of the Mt. Vernon Telephone Co. for authority to increase rates for automatic operation, and to discontinue Extended Area Service (EAS) between its Verona and New Glarus exchanges (TELEPHONY, Mar. 7).

Ask Dial Rates in Neb.

Hartington Telephone Co.'s application to increase rates on conversion to automatic operation has been set for a May 5 hearing by the Nebraska Railway Commission.

Elected Mayor in Minnesota

B. E. Mellum, manager of the Sleepy Eye (Minn.) Telephone Co., recently was elected mayor of Sleepy Eye.

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New Film Illustrates Care Of Linemen's Climbers

"There are *old* climbers and there are *careless* climbers, but there are *no* old, careless climbers." This terse truism was stated in the "Lifetime of a Lineman"—one of the safety films prepared by Buckingham Mfg. Co.

The 1959 sequel to the "Lifeline" film is titled "The Proper Care of Linemen's Climbers" and has just been made available for purchase or rental (or for group showing by a Buckingham distributor) to construction and maintenance crews in the communication and other utility fields.

The new film graphically depicts the exhaustive mechanical and technical procedures used in developing a climber which, with sensible usage, will assure maximum safety and long wear.

There are close-up shots of a series of rigid tests which determine the exact hardness of steel, tests which eliminate any possibility of loose spurs, and tests for ductility. Linemen are shown brutal factory tests which bend the leg-iron into a U-shape to expose any possible inclination to fracture of the metal even under exaggerated conditions. Other severe tests are reported to prove the adaptability of the metal to temperature changes.

This factory-tour-on-film is interesting and informative to linemen, the company states.

The Buckingham film also emphasizes the vital need for periodic inspection and gives tips on the proper care of climbers.

It stresses the need for inspection for cracks which may have developed from long and negligent use in the field. It portrays proper shaping and filing operations. The illustrated use of the linemens' gauge shows what needs correction—it points out where weakness may induce future treuble. The film tells what is to be done and where to do it before real danger develops.

This 16mm black-and-white sound film is timed at less than 20 minutes viewing. For further information contact "The Proper Care of Linemen's Climbers," Buckingham Mfg. Co., Inc., Binghamton, N. Y.

Temperance Is Prudent

"Temperance keeps the senses clear and unembarrassed, and makes them seize the object with more keenness and satisfaction. It appears with life in the face, and decorum in the person; it gives you the command of your head, secures your health, and preserves you in a condition for business."—JEREMY COLLIER.

MID-SPAN TRANSPOSITIONS...

easily, accurately and economically installed

with Case aluminum span-point brackets

The Case span-point transposition bracket now makes it possible to transpose communication wires at any point of the line **between poles**, regardless of pole spacing ...eliminates the need for special transposition poles. This lightweight (only 3½ lbs. complete with insulators and bushings) non-corrosive, ruggedly designed bracket features insulators that roll thus protecting wire insulation in stringing and reducing installation time. It is the **only** bracket designed **especially** for mid-span transpositions.

All Case transposition brackets come equipped with a special rubber bushing... in the event of glass insulator breakage, the line wire falls on the rubber bushing, with no loss of communication service.

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CASE BRACKETS . . . STRONG, LONG-LASTING, ECONOMICAL, ESPECIALLY ADAPTED FOR CARRIER-CIRCUIT CONSTRUCTION

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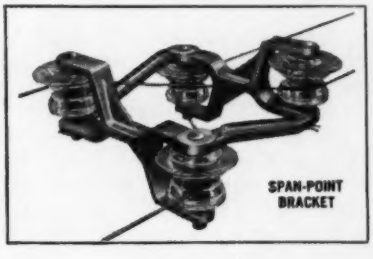
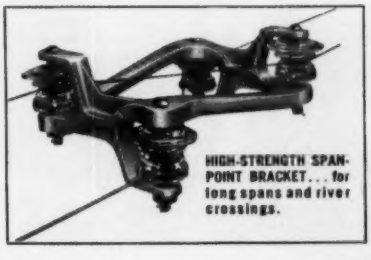


SPAN-POINT BRACKET



HIGH-STRENGTH SPAN-POINT BRACKET... for long spans and river crossings.

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PROBLEM?

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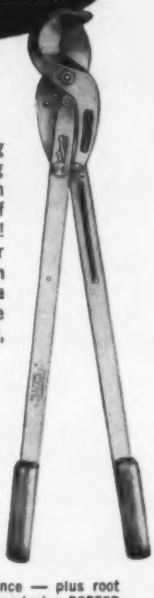

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When it comes to trimming trees and brush, nothing matches the rugged strength and light-weight ease of PORTER'S full line of Pruners! Whether for open-growth or thick-growth clearance, in town or country, there's a PORTER PRUNER to do the job better — with less time, less trouble!

POLE PRUNERS: In all sizes, long and short arm, with or without pulleys! Cut up to 1" green wood! Solid or jointed poles available.

. . . AND BRUSH CUTTERS, TOO! The FORESTER Heavy Duty Brush Cutter is practical for every purpose — from low-height heavy pruning to general brush cutting and line clearance — plus root cutting. Unique Power-Slot is exclusive PORTER feature — gives user increased cutting power! Two sharp cutting blades make clean, close cuts in 2 sizes, capacity up to 2" green wood.

Start using PORTER PRUNERS today. Available at your supply house, or write today for free catalog that gives full details on PORTER'S complete line of PRUNERS!

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ABC OF THE TELEPHONE

(Continued from page 62)

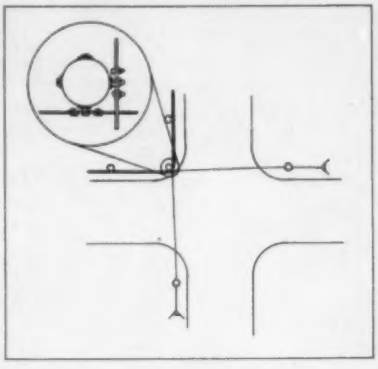


Fig. 5

The crossings as illustrated can be used without major rearrangement if future plant extensions require placement of cable in either of the two remaining directions from the corner.

(3) Two roadways intersect—the cable route continues along one roadway with a leg of the cable turning a corner at the intersection, see *Fig. 6.*

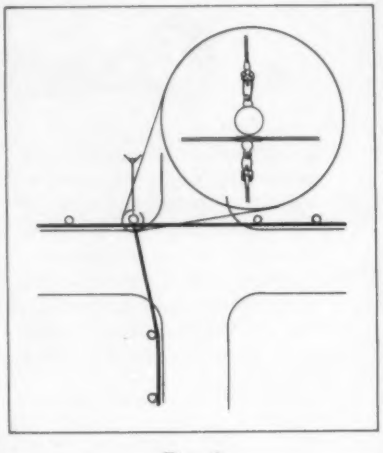


Fig. 6

In this instance a head guy is required only for the branch leg of the cable run. The strain of the straight-through section is equalized at the corner pole. The junction is made at the corner pole because a strand junction (similar to the crossover shown in Fig. 4) would place an undesirable pull on the main strand.

A thimble eye nut placed on the through bolt over the three-bolt clamp permits both strands to be supported by the same through bolt.

(4) One roadway joins another to form a T-junction — the cable route turns a corner at the intersection, as shown in *Fig. 7.*

Head guys are installed for each

Trouble Recorder Card Rack

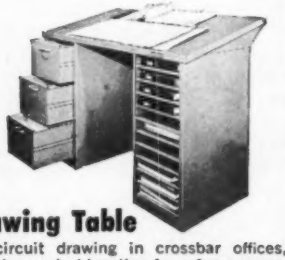
For fast orderly sorting of Trouble-Recorder cards, has 38 card slots in two banks with index strip between. Base is 38" by 8". Height 15". No. D30225-1.

Telephone Office Equipment

to lighten your work and improve efficiency

Work Bench

For repair, assembly, test and paper work. Top drawer divided into 24 compartments for parts and tools. Large file drawers are for circuit drawings. 54" x 25" top covered with masonite. Height 36". Drawers may be inserted from back to reverse position of kneehole. No. D29978-3.



Drawing Table

For circuit drawing in crossbar offices, provides central location for reference material. Masonite top is 30" x 60". Height 36" at front, 42" at rear. Three large file drawers at left for drawings. Eleven shelves at right are 2½" high, 14" wide, 18" deep for sketches, sequence charts, book type SD sheets, trunk serials, etc. No. D30326-1.

Color of all units: Baked-on gray enamel unless otherwise specified.

TWIN POST
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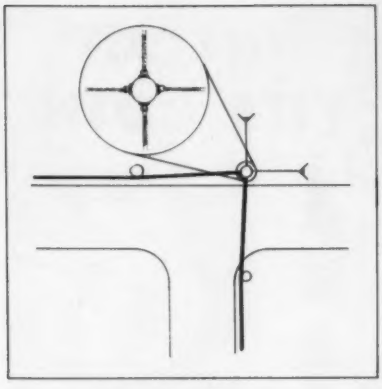


Fig. 7

strand. Two through bolts are installed with 4 inches of separation at the corner pole. This amount of separation is of little consequence, as the cable is placed in a smooth curve around the corner.

The slight angle shown in the spans adjacent to the corner pole is caused by the strand swinging to the through bolt placed in the center of the corner pole. Two through bolts are used at this location to provide additional strength required at a corner pole roadway crossing.

The two strand cables are bonded with a length of No. 10 AWG copper wire as required under the principle of coordinated protection of telephone plant.

(5) One roadway joins another to form a T-junction — the cable route continues along the through roadway and a leg of the cable turns a corner at the junction, as illustrated in *Fig. 8*.

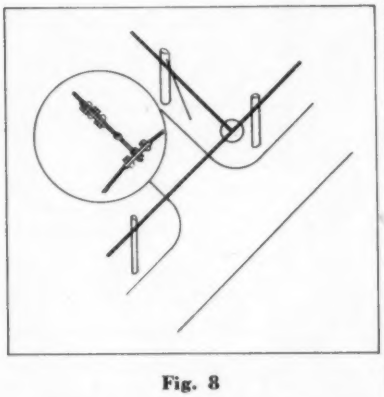


Fig. 8

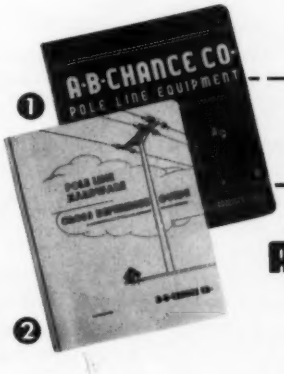
A head guy is provided for the first pole on the branch cable route. A slack span is used between the strand junction to avoid placing excessive side pull on the main strand and cable.

A slack span is placed with more sag and less tension than normally would be provided for a span in which

HOOKS on TOP—BOLTS on BOTTOM

It's as simple as that to install. The top hook slips over the guy wire without the groundman stretching. A single bolt at the bottom fastens the guard to the guy rod, the guy wire or the guy loop. Guy guards that are easy to install are easy to get installed where and how you want them.

808 guards are available in 7 and 8 foot lengths in both galvanized steel and aluminum. Turned-in edges give added strength and safety.



Use these Aids to Pole Line Hardware Selection:

1. Chance T-48 Catalog.
2. Pole Line Hardware Cross Reference Guide.

CP59-13

A. B. CHANCE COMPANY
CENTRALIA, MISSOURI
A. B. Chance Co. of Canada, Ltd., Toronto

Now Ready!

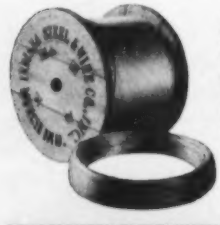
Sag and Tension Data For Strand When Supporting Telephone Cable

WRITE FOR THIS NEW MANUAL!

Those who design, build and maintain aerial telephone cable lines will find the technical information in this manual both pertinent and useful.

The sag and tension data cover three sizes of "Utilities Grade" strand when used as messenger to support plastic-sheath or lead-sheath cable. These data will be helpful in determining the size of strand to be used for a particular weight of cable and span length, and in answering other questions relating to design problems.

This Manual will be mailed without obligation to all interested telephone men. Ask for Manual No. MS-58.



Crapo Galvanized Steel Strand (for both messenger and guys) is available in all standard sizes and grades and in Class A, B and C coatings.

INDIANA

STEEL & WIRE CO., INC.

Muncie, Indiana

the strain was equalized from each end.

In this instance, the slack span is less than an average span in length. As a result, the sag of the slack span is not excessive.

Also, the main strand is pulled only a relatively few inches out of line. The amount of side pull on the main strand usually is not sufficient to require any more guying than indicated in the illustration.

(Part 88 of "ABC of the Telephone" will appear in a near future issue.)

AT&T Stockholders OK Split At Biggest Corporate Meet

Stockholders of American Telephone & Telegraph Co. on Apr. 15 in New York City overwhelmingly approved a 3-for-1 split of the stock at the biggest annual meeting in United States corporate history.

The voting was 59,387,892 shares in favor and 542,809 shares against. Approval by holders of two-thirds of the outstanding 70,724,694 shares was required for ratification. The actual margin was 84 per cent.

More than 12,000 stockholders attended, by AT&T official estimate, shattering the previous record for annual meetings of just over 4,000, held jointly by General Electric Co. and Standard Oil Co. of New Jersey.

Before getting down to the serious business of splitting the stock, shareholders complimented the country's biggest public utility on having "the best management in the world."

Stockholders also re-elected 18 directors, renamed the auditors, and rejected two stockholder proposals for cumulative voting and a $25,000 annual ceiling on executive pensions. Management recommended a vote against the last two propositions.

The stock split became effective Apr. 24. The first dividend on the new shares will be paid in July and will carry the first raise in the dividends since 1921.

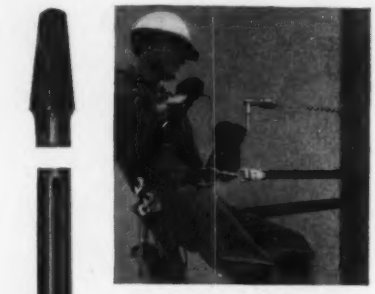
It will be a quarterly dividend of 82½ cents a share at the new annual rate of $3.30, equivalent to $9.90 a share on the old stock.

The split was effected by changing the company's 100 million authorized shares of $100 par value capital stock into 300 million shares of $33.33 par value. That would make the number of split shares outstanding 212,173,292.

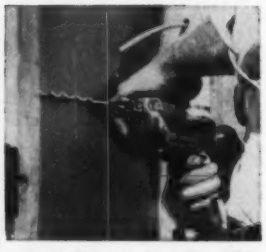
Blustering in Error

"People first abandon reason, and then become obstinate; and the deeper they are in error, the more angry they are."—BLAIR.

ONE BIT FITS BOTH



1. Hand Brace



2. Electric Drill

New Irwin Adapter Shank Wood Bit

Now you can eliminate the need to stock two types of wood auger bits. Irwin's new Adapter Shank Bit fits both hand braces and power drills.

With hand braces, use the Adapter Shank Bit as it comes. Cut off taper square and the Adapter Shank, with its 6 "hex flats", chucks perfectly in power drills or hand braces, either one. No wobble, no run-out. Clean, efficient cutting action. Reduces inventory and record keeping by 50%. Saves time on the job, too. Call your distributor, or write today for complete information. Sizes 4/16" to 17/16", both solid center and single twist types.

***All Irwin Adapter Shank Wood Bits** are forged in one piece from special steel and heat tempered full length for longer life. Plastic coating on balanced cutting heads guarantees factory-fresh sharpness, unequalled performance. Widely used by utilities, electricians and construction workers.*

IRWIN auger bits • screw drivers

Wilmington, Ohio

CABLE PRESSURIZING

(Continued from page 54)

gas meter, air rate flow meter, pressure shut-off valve and soft copper or plastic tubing. As a part of a continuous feed pressure system, the specific functions of these panels are to:

(1) Measure the total output of an air dryer to avoid overloading the unit.

(2) Measure the volume of air consumed by individual or groups of cable.

(3) Measure the instantaneous rate of air flow to individual cables.

The development of packaged metering panels, as illustrated in *Fig. 2*, has simplified the installation of such equipment and reduced the costs of installation by a substantial amount.

The measuring of total unit output and volume of air consumed is, of course, accomplished by means of the gas meters. The flow meters measure the rate of air flow to individual cables. These flow meters are equipped with shut-off valves which are used to isolate individual cables in the event of extensive damage to a particular cable or, in some cases, construction work may warrant such isolation.

It is necessary to periodically read and record the gas meter and air rate flow meter data in order to determine normal "levels" for a particular "gas section" and to determine when sheath "breaks" have been encountered. In addition, it will also be necessary to periodically read and record the pressure at the ends of all branch cables not monitored by air consumption readings or contactors. It should be kept in

Answers To Questions On Page 72

(1) The operator will say, "If you will hold the line, I will try your call at once."

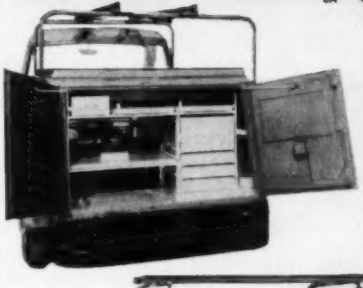
(2) The operator should be sure she has the calling party's number and then say for example, "All right, sir. I will call you." The operator will hold the calling line and proceed with the call.

(3) The operator will refer the call to her supervisor and will not release the line until so requested.

(4) Community dial offices are provided with central office alarm sender equipment.

(5) The central office alarm sender equipment routes an alarm call over regular operator trunks to the operator office.

SERVICE BODIES by UTILITY BODY OAKLAND



COMPLETE LINE

The Utility Body Fleet represents the ultimate in its field. There is a Utility Body for every service and maintenance need in every service field. In addition each and every line of Utility Bodies can be adapted to each customer's individual specifications at no extra cost.

Series I-40

INSTALLERS BODY

Telephone Installation and Servicing made easier with Utility Body Company's Special Truck Body. Designed and developed specifically for the Telephone Maintenance field the Series I-40 incorporates all the latest features in modern advanced design so that its functional versatility is easily and effectively adapted to varied urban and rural service problems.

It is Utility Body Company's unique service that gives you custom made bodies designed to meet individual requirements at no extra cost.

The Series I-40 Installers Body has maximum storage space for 4 or 6 foot ladders as specified and for all telephone installation and maintenance equipment including apparatus, directories, pay out reel, wire, belts and materials.

Quality...Functional Performance...Versatility plus Custom Design to meet individual requirements...all included in just **one price.** For additional information write Utility Body Company or contact your nearest distributor.

UTILITY BODY Co. 1530 WOOD ST. OAKLAND, CALIF. TWinoaks 3-8980

mind, however, that only leaks that interfere with maintaining the two pounds of air will be located and repaired. Leak location can be accomplished through the use of standard gradient procedures.

As previously stated, the industry has long appreciated the desirable aspects of pressurizing complete cable systems. With the advent of economical, reliable air drying equipment, an important weapon has been added to the arsenal required to fight rising costs and, at the same time, serve as an aid in the continuing efforts to improve customer service.

Area History Featured In Carolina T&T Report

Three historical landmarks located in the operating territory of Carolina Telephone & Telegraph Co., Tarboro, N. C., were featured on the front cover of the company's 1958 annual report.

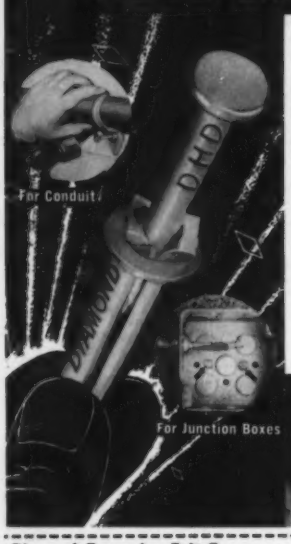
The theme, "Your Company and The Area It Serves," received further treatment inside the report in the form of a double-page photo layout of industrial, agricultural, and recreational scenes. This layout surrounded a map locating the 111 exchanges of the company in 41 eastern North Carolina counties.

The cover drawings of the historical locations (one in each of the company's three districts) were repeated in miniature on page one together with a description. The landmarks featured were:

(1) Constitution House, Halifax. In April 1776, it housed the meeting of 139 delegates to the provincial congress. Later that same year, in November, an elected congress met there and drew up the state's first constitution.

(2) The Market House, Fayetteville. This building dates back to about 1838. Originally the Town Hall, it served as a market place for meat and produce

"ONLY 20 SECONDS* HOLE and ALL . . .



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JOHN A. WRIGHT Vice President

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Please send me samples of your DHD Hammer Drive Anchors
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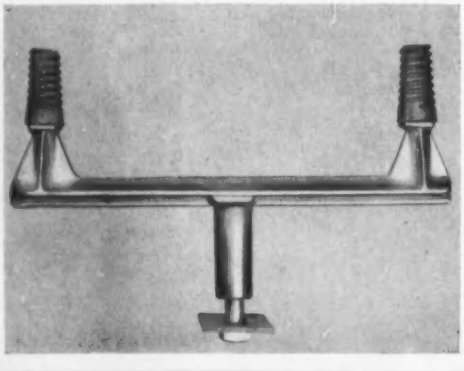


ALUMINUM TRANSPOSITION BRACKETS

Helps eliminate frequent replacements. Made of a new aluminum alloy, completely assembled and ready to install in crossarm-saving the additional cost of assembly.

PERMANENT MOLD FOUNDRY, INC.
613 Daniel Street Dayton 7, Ohio

after the Civil War and currently provides quarters for the chamber of commerce. An earlier structure on the same location, the State House, was built about 1780; housed the general assembly in 1786, 1789, 1790, and 1793; and was the site for adoption of the federal constitution in 1789.

(3) Tryon's Palace, New Bern. Erected in 1770, the palace served as the residence of Colonial Governor Tryon. The beautiful building was partially burned in 1798. Today, restoration of the palace, its furnishings and grounds has been completed. Scheduled to be opened to the public early in 1959, the palace promises to become one of the great historical meccas of North Carolina.

Employes of the company were recognized in the annual report, both in photos and in drawings. Photos of employes at their work appeared in the sections concerning the summary of operations and important events. The title page for the "Important Events" section carried a drawing of a plant man; the "Summary Operations" title page featured a telephone operator, and the title page for "Financial Statements" depicted an accounting department scene.

In the Carolina company, the public relations department is responsible for the publication of the annual report. A majority of the photographs which appeared in the report were made by Carolina Telephone's public relations department.

LATEST DEVELOPMENTS

(Continued from page 80)

The new product is one-fourth aluminum by area as compared to much smaller areas for aluminum-covered steel wire made by other methods. This generous proportion of aluminum yields an electrical conductivity of 33 per cent.

Alumoweld is available either solid or stranded in sizes of No. 10 AWG, and larger, put up in coils and reels of convenient lengths. It is light in weight, 1,000 feet of No. 10 AWG weighing only 23 pounds. Its other advantages are better corrosion resistance, better conductivity and permanent high strength.

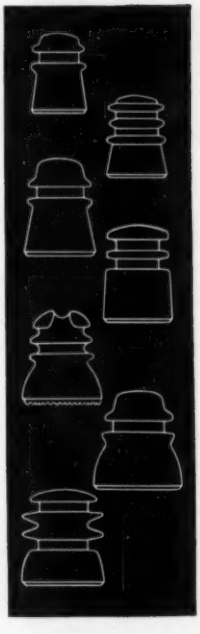
•

Ribbon Cable. (Fig. 112). Hitemp Wires, Inc., announces a new, improved ribbon cable called Tempbraid. Manufactured in widths of from one-fourth to 3 inches, parallel Teflon lead wires are woven with Teflon and other yarns into a flat, extremely flexible ribbon.

The applications of Tempbraid have

NUMBER 45 - *For telephone or telegraph long-line construction. Double petticoat with square groove for firm wire support.*

HEMINGRAY INSULATORS



Easily and Economically Installed

Hemingray Glass Insulators stand up under severe conditions, do not deteriorate, provide the service you need to assure continuous operation of communication lines. The dependability of Hemingray Insulators as proved by their years of sturdy performance is one of the reasons behind their world-wide acceptance.

Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

The immediate availability of these insulators is further assurance of Hemingray dependability. An up to date distribution system makes Hemingray Insulators available when you want them and where you need them.

Hemingray Glass Insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

There's a Hemingray Insulator to meet every communication line requirement.

World standard for quality Since 1870

HEMINGRAY INSULATORS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

NEW! from **S&G**

THE MODEL "R" DEHYDRATOR

AUTOMATIC IN OPERATION

The Model "R" Dehydrator is designed to supply dry air to aerial and underground telephone cables. It is especially suited for small installations of 80 miles or less of cable. Wall or relay rack-mounted, the Model "R" is approximately 24" high, 28" wide and 8" deep. Operating voltage is 115 volts, 1 phase, 60 cycle, and the output is 700 standard cubic feet per day maximum, with a dewpoint of —65°F. Other outstanding features are:

- Hi-Lo pressure switch for alarm
- Humistat for alarm above 4% Relative Humidity.
- Power failure relays and separate fustat
- By-Pass Valve & Alarm for excessive Relative Humidity.
- Mechanical control valve for stand-by air supply (O.P.N.) in event of power failure
- Additional safety features on Air Compressor
- Power supply is 115-volt, AC on the Dehydrator and Air Compressor

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Communications Division of
International Telephone & Telegraph Corporation

KELLOGG PRODUCTS REBUILT LIKE NEW!

telephones · spring jacks · lamp jacks · line relays · cut-off relays · cord circuit equipment · relay spring combinations ...and other wanted items!

Fig. 112. Ribbon cable.

many advantages where motion is involved; such as being pulled over rollers, coiled on drums, and as connections between chassis and panel doors.

By impregnating the yarns, slitting the ribbon is feasible, permitting the construction of small inexpensive harnesses.

Increased numbers of conductors can be placed in square or rectangular channels as a result of the greatly improved space factor of square and rectangular harness constructions.

•

Adjustable Steel Pole Extension. (Fig. 113). This adjustable steel pole, by Utility Products Co., consists of two parts. One is a flanged plate which is

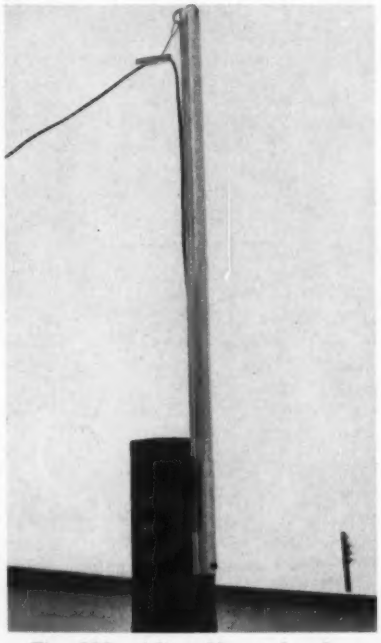

Fig. 113. Adjustable steel pole extension.

put 'em up and forget 'em

. . . That's what you do with T-C Pressure-treated poles. And you rest assured you have poles to serve for generations. There's a very simple reason why . . . T-C Poles get the best in preservation, the best in chemical preservatives and the best controlled pressure treatment so far developed by modern Technology. Next time specify T-C Pressure-Treated Protection . . . Put 'em up and forget 'em . . . for generations.

Specify T-C

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PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

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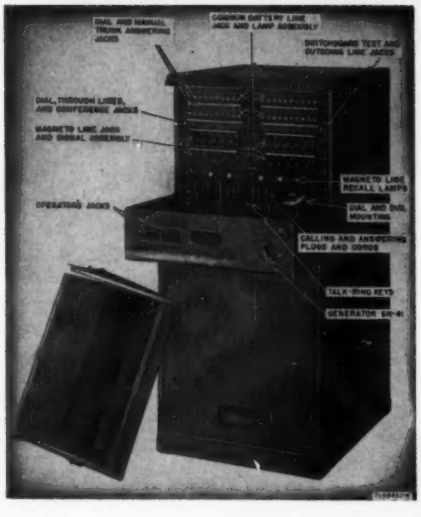
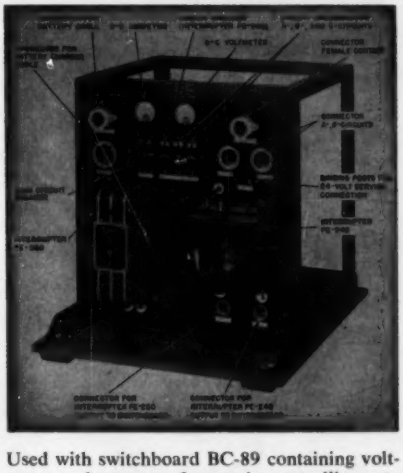


BD-89 switchboard is a complete, portable, single position, two panel, manually operated telephone switchboard for serving both magneto and common battery lines. It is also arranged for handling, originating, and terminating trunk line traffic. Universal cord circuits are used. Each switchboard contains the following circuits: 1—operator's telephone circuit with grouping key; 13—universal cord circuits; 1—ringing circuit; 20—line circuits, magneto (drop & jack); 37—line circuits, common battery (lamp & jack); 1—dial cord circuit; 1—trunk circuit two-way to dial (automatic telephone central office); 2—trunk circuits, two way common battery manual telephone central office; 1—line circuit, outgoing; 2—line circuits, through; 1—conference circuits (5 jacks); 1—switchboard test circuit; 1—nite alarm test circuit; 1—fuse alarm circuit; 1—battery & ground circuit (24 V.); 1—power & heating circuit (110 volt). Comes in case CS-71; shipping wt. approx. 500 lbs. Have 35 all new or like new units.

Price.....$100 each

BD-98 PANEL...$25 Ea.



Used with switchboard BC-89 containing voltmeter and ammeter for use in controlling rate of storage battery charge; BD-98 also contains interrupter PE-250 for supplying ringing current from 110 V. 60 cycle AC. It also contains PE-248 Interrupter which supplies ringing current when battery power is used. Each unit shipped in case CS-71. Approx. wt. 300 lbs. Have 150 units available in unused condition at $25.00 each.

JEFFERSON AIR DEPOT — Box 798 NMS — Madison, Indiana

TAKE A BIG STEP TOWARD **SAFETY** WITH **DUO-SAFETY LADDERS**

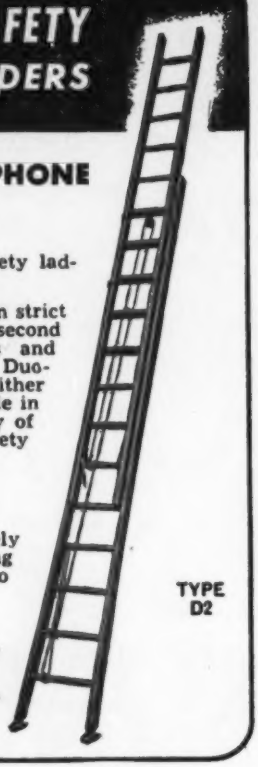
... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!



TYPE D2

For Information, Contact Your Supply House, or

DUO-SAFETY LADDER CORP.
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GENERAL MACHINE PRODUCTS COMPANY, INC.
Old Lincoln Highway at Pa. Turnpike, Trevose, Pa.

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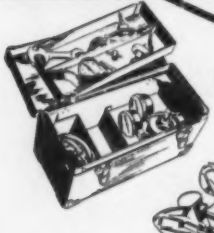
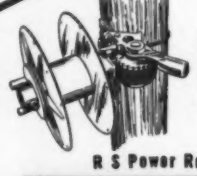
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels

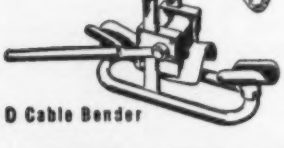


Pressure Testing Kit



R S Power Reel

C R Power Reel



D Cable Bender

Designed by Greyson

B, C, D, E & G Cable Lashers

Special Purpose Tools To Specifications
Literature on Request

Over 500 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918

GMPCo

nailed or lagged to the pole. The flanged steel pole is then inserted in the flange plate and raised to the desired height. A ⅝-inch round lag bolt is used to fasten the steel post to the pole.

The principal use for this extension is in rural areas where the service is required on the other side of the road from the pole line and the existing pole is not high enough to provide proper clearance. This unit is available in either 5 or 8-foot lengths.

•

Plastic Cable with Copper Shielding. The Superior Cable Corp. has announced the availability of plastic telephone cables incorporating longitudinally applied corrugated 5 or 10 mil copper shields. The cable on which this shielding material will be used exceeds all the requirements of the most rigid specifications now currently in use for exchange type telephone cables. The advantage of the product is its ability to overcome certain electrolytic actions which occur when cables are mechanically damaged and unlike metals are used as conductors and/or shields.

The product using the copper shielding is available in all standard sizes and is recommended by the manufacturer for use in obtaining the highest quality exchange circuits.

•

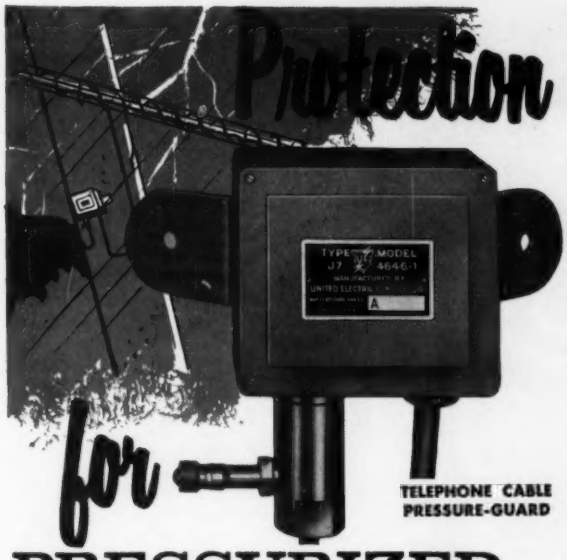
Self-Bonding Electrical Tape. Bishop Mfg. Co. states that its Bi-Seal self-bonding electrical tape is virtually non-absorbent, presenting a strong barrier to water permeability and providing as much or more protection than the original wire or cable insulation. When applied, the layers of Bi-Seal become so tightly fused that it is impossible to delaminate them, insuring against any lateral moisture penetration, it is claimed.

This polyethylene-based tape possesses excellent electrical, chemical, mechanical and thermal properties, and is easy to apply.

There is no right and wrong side to Bi-Seal—no sticky adhesives to pick up foreign matter or tangle together during application in close clearances, yet Bi-Seal conforms perfectly to the most complex shape or contour, the company states. This tape is available in seven colors for identification: black, white, red, yellow, orange, green, and blue. An adhesive cement is available for use with this tape, if desired.

•

Aluminum Cleaner. This Aersol aluminum cleaner by Magnolia Chemical Co. cleans and shines the entire aluminum telephone booth, both inside and outside, with very little effort. It will also be found excellent for cleaning and



PRESSURIZED CABLE SYSTEMS

The need for an automatic device to stand guard at intervals along pressurized cables has long been recognized. Now United Electric Controls has the answer . . . The Telephone Cable PRESSURE-GUARD.

Developed by U.E., in collaboration with the Bell System, the PRESSURE-GUARD is now available to all Telephone Companies as an aid in reducing cable maintenance costs.

In the past the location of a cable leak was a matter of man hours in climbing poles and manually checking pressure points. When the pressure guard detects a pressure drop it introduces an electrical resistance . . . which indicates at a central monitoring source a cable leak and the location.

Specifications Pressure-Guard

Field Adjustment Range	0 to 15 PSI
Factory Setting	2 ±¼ PSI on falling pressure
Pressure Response	4 ±½ oz.
Proof Pressure	30 PSI
Electric Rating	0.01 amp 110V DC
Load Resistor	Carbon composition 330,000 OHM 1 watt
Take-Off Tube	Tinned Copper 6′ x ¼″ x 0.035
Drop Wire	6′ Type SJ0 #18 stranded 0.2 conductor
Size	6″ x 4½″ x 2½″
Approximate Weight	1¾ lbs.

These specifications may be modified in a great variety of ways to meet the requirements of any given application.

UNITED ELECTRIC *manufactures a complete line of temperature, pressure, and vacuum controls. For applications requiring custom-built units or modified standard units, call upon a UE application engineer for recommendations. Write for complete specification and pricing data on the Telephone Cable Pressure-Guard. Similar data available on all other UE controls.*

United Electric Controls
COMPANY
85 SCHOOL STREET, WATERTOWN, MASS

The CF&I Image assures quality

Galvanized Steel Strand

for Guy, Messenger & Ground Wires

The CF&I Image—giant symbol of dependable steel products—contributes to the ever-expanding industrial growth of America. And where telephone or utility lines spring up, you'll find the CF&I Image—for in the electrical and communications industries he stands for top-quality guy, messenger and ground wires.

To prevent pole leaning and power line sagging, use CF&I Galvanized Steel Strand. Made to customer specifications or to ASTM specifications A-122 or A-363, the steel strand is quality-controlled throughout every stage of production. That's why utilities rely on CF&I Galvanized Steel Strand to stand up under the most rugged conditions.

When you need strand, see your nearby CF&I representative or local distributor for complete details on CF&I Galvanized Steel Strand.

6630-A

CF&I STEEL **GALVANIZED STEEL STRAND**
THE COLORADO FUEL AND IRON CORPORATION

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
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The Head Set Ear Cushion
Designed Especially for Switchboard Operators

Made of Soft Pliable Vinyl Foam

- **Easy on Ear**
- **Inexpensive**
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Write for Details

Thanks for your splendid response. All orders being shipped promptly.

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STERLING
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EARTH BORING MACHINES
for the Telephone Industry

DIGS THE HOLE!
SETS THE POLE!
"PROSPECTOR"
Time Tested, Fast, Profitable Digging - Write for literature

Models To Fit Every Digging Need

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Nation-Wide Parts and Service

polishing all aluminum, chromium, stainless steel, brass enamelled and other high glossed surfaces. It is excellent, also for cleaning aluminum buildings, doors, sash and aluminum awnings.

•

Slip-Proof Floor Wax. This new Magnolia non-slippery floor treatment is radically different from all others and is ideally suited for use in telephone buildings. It dries almost instantly to a rich lustre which may be converted to an even higher gloss by polishing, if desired. Unlike ordinary floor waxes, this new treatment is not soft or sticky nor is it brittle. It outwears ordinary floor wax and does not scratch. Scuff marks are easily wiped out with machine polishing or a yarn dust mop. Traffic lanes are readily touched up without showing overlaps. It may be applied with a sheep-skin applicator or a string mop.

This wax is recommended for linoleum, asphalt tile, composition flooring, varnished, sealed, shellacked or painted wood, marble, terrazzo, tile, rubber and painted or "raw" cement.

A large eastern casualty insurance company, after scientific tests, gives it a co-efficient of friction of .203 (as low as .191 is still considered safe), the safest of several waxes tested, and approved it for their insurers.

•

Asphalt Tile Finish. This Magnolia tile finish is recommended for use by the telephone industry. It is listed as anti-slip floor treatment material by the Underwriter's Laboratories, Inc. It gives prolonged life and beauty to asphalt tile floors. It helps restore the surface—dirt cannot penetrate. It forms a protective finish that withstands heavy traffic and hard usage. Beautifies and highlights the original colors of the tile without fear of softening the tile or causing the colors to run.

If a wax finish is desired, asphalt tile finish will provide a foundation for the wax—giving longer wear and a higher gloss to the wax used. Heavy traffic areas may be retouched at any time. The finish can be removed, if desired. It contains no wax so it can be used where a glossy but non-slippery surface is desired.

Yugoslavian Fair to Cover Entire Electronics Field

The Yugoslavian Sixth International Fair of telecommunications, broadcasting, television and automation is to be held on Oct. 16 through 25 in Ljubljana.

It will be a specialized event covering the entire field of electronics. Displays will include telephone, telegraph and wireless transmission equipment, telecommunication equipment of all kinds, and radio and television transmitters and receiving sets as well as electronic measuring devices.

A seminar concerning modern electronics, especially as it is adapted to present-day Yugoslavia will be held during the fair.

For details on the exhibition, those interested should write directly to Ljubljana Fair, Gospodarsko Razstavisce, Titova 50, POB 413, Ljubljana, Yugoslavia.

G. T. Winn Named P.R. Head of General of Ohio

Clare E. Williams, president of the General Telephone Co. of Ohio, has announced two organizational changes within the company's general offices in Marion.

G. Thomas Winn has been appointed public relations director succeeding Leon E. Brookhart. Mr. Brookhart has been named marketing and sales manager for the General Telephone Co. of Indiana, Ft. Wayne.

Mr. Winn has held his former position of personnel assistant-communications and development, since January, 1958.

A native of Huntsville, Mo., Mr. Winn

Stewart

TEST EQUIPMENT

Locates Trouble FAST

Model A—LOCATOR-TESTER
Model D-I—MIDGET DETECTO-METER
Model E—EXPLORING COIL AMPLIFIER
Model G—DUAL ELECTROLYSIS VOLTMETER
Model H—LINEMAN'S TEST SET
Model J—TRANSISTOR OSCILLATOR
Model JK—COMMUNICATION TEST SET
Model K—D B METER
Model L—CABLE TESTER
Model M—INTER COMMUNICATION UNIT

STEWART BROTHERS
Division of Instrument Laboratories
315 W. WALTON PL., CHICAGO 10, ILL.

began his telephone career in the plant department of the Southwestern Bell Telephone Co. in 1937. After working at Southwestern for a year, he moved to Iowa to work for the Iowa Continental Telephone Co.

In December of 1938, Mr. Winn joined the Missouri Telephone Co. Although his experience varied, it led to the management of three district offices, and in April, 1947, to commercial and traffic superintendent.

Mr. Winn was transferred to the Ohio Consolidated Telephone Co. in 1953 as general traffic superintendent, with headquarters in Portsmouth, O. He remained in this capacity until accepting the post in the personnel department of General of Ohio.

He attended Moberly Junior College and the University of Missouri where he studied business administration.

Mr. Brookhart had served as public relations director since June, 1957, when he relocated his family to Marion from San Bernardino, Cal. Before going to Ohio, he held a number of positions with General Telephone Co. of California.

Both organizational changes will become effective May 1.

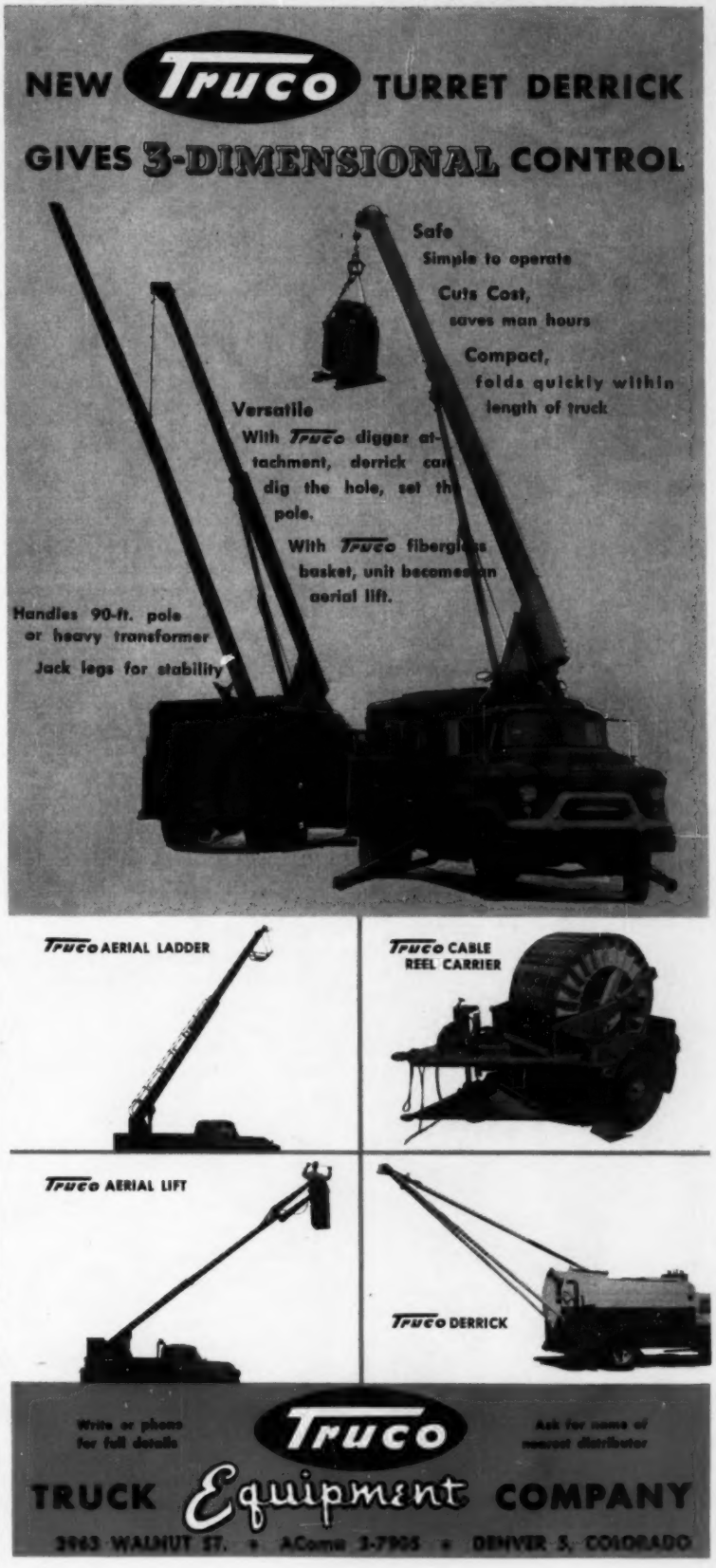
Tulloch Installation Head Of Rochester, N. Y. Company

Thomas Tulloch has been promoted to superintendent of installation for the Rochester (N. Y.) Telephone Corp. He was formerly assistant construction superintendent.

THOMAS TULLOCH

As installation head, he will be responsible for installing new service, moving existing service, and making changes in and additions to existing service.

Born and educated in Scotland, he joined the Rochester corporation as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GIVES 3-DIMENSIONAL CONTROL
Safe
Simple to operate
Cuts Cost,
saves man hours
Compact,
folds quickly within
length of truck
Versatile
With Truco digger attachment, derrick can dig the hole, set the pole.
With Truco fiberglass basket, unit becomes an aerial lift.
Handles 90-ft. pole or heavy transformer
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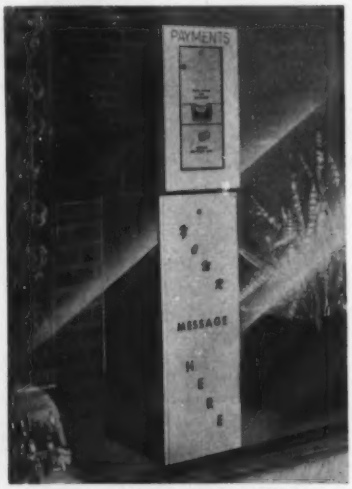
DROPOSITORY
Specifically Suited to YOUR Needs!
COMPLETE *Self-Service* EQUIPMENT for PAYMENTS or DEPOSITS *"After Hours"*
Used by Public Utility Companies All Over the World

PAYMENT COUNTER
For use by your Collecting Agents such as Retail Stores, Banks, etc.



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(May Be Installed In Walls)

The Mosler DROPOSITORY Corporation ®
GRANDVIEW, MO.
Telephone: (Kansas City Exchange) SOuth 1-8911

an installer immediately after his arrival in the United States in 1923.

During World War II he served three years in the United States Navy. During that time, he participated in the supervision of the construction and operation of naval telephone communications in the Admiralty Islands and New Caledonia.

Obituaries

O. R. ROACH, 71, well-known Independent telephone consulting engineer, died recently in Fort Smith, Ark.

Mr. Roach retired from active service in 1958. He was considered an expert in the field of rate cases studies, appraisals, and plant engineering.

He was born Aug. 29, 1888 near Ozark, Ark. He went to school in Stroud, Okla., and attended the University of Oklahoma, studying electrical engineering.

Beginning his telephone career upon leaving the University of Oklahoma in 1909, he became a student engineer of the Pioneer Telephone & Telegraph Co. (now Southwestern Bell Telephone Co.) at Oklahoma City.

In 1912, he was promoted to field engineer and during the next five years he laid out a large part of the toll lines in Oklahoma.

A month after the United States' entry into World War I, Mr. Roach enlisted in the Army and was commissioned a first lieutenant.

In 1919, he returned to Southwestern Bell and was assigned responsibility for the engineering of several large Oklahoma exchanges, including Oklahoma City, Tulsa, and Muskogee.

The following years carried him into every state in the Southwestern Bell territory—to St. Louis for budget and cost work; to Topeka as plant engineer and then to Oklahoma as plant supervisor for a three-state area.

After three years as plant supervisor for the Texas state area, in 1930, he was made division plant superintendent for southeast Texas with headquarters in Houston.

Becoming interested in the Independent field, Mr. Roach, in January 1932, accepted a staff position with the Associated Telephone & Telegraph Co. with responsibility for general plant operations of several foreign operating companies of the former Gary Group (now a part of General Telephone & Electronics Corp.).

Shortly afterward, he became general plant superintendent and engineer for the 41 exchanges of four Illinois companies of this group.

In January 1945, Mr. Roach was ap-

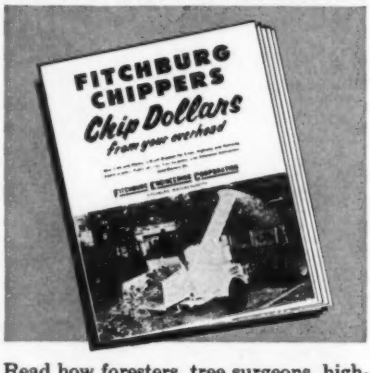
EXTRA Holding Power
QUICKLY Installed
TOUGH For long life

EVERSTICK ANCHORS

For new construction and maintenance — Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resiliant, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

HOW TO SAVE MONEY IN BRUSH DISPOSAL



Read how foresters, tree surgeons, highway and park commissions, telephone, power and gas companies cut brush disposal costs up to 50% with a Fitchburg Chipper.

See cut-away color drawings of the Fitchburg Chipper—the exclusive Fitchburg spring-activated feed plate—pictures of different models in action.

FREE — Write for your copy of "Chip Dollars from Your Overhead." Address Dept. T-49.

FITCHBURG ENGINEERING CORPORATION
FITCHBURG, MASSACHUSETTS

TAILOR-MADE to suit your needs!

Sales, technical and factory people are a close-knit group at Kennecott! They're experts at working together without fuss or delay, producing telephone cable to customers' specifications. This flexible organization of specialists has a wealth of practical know-how on tap. You *know* the cable they make for *you* will stand the test of time. You see, lines of Kennecott Telephone Cable have been delivering fine service since 1897! Call the Chase sales office near you for full details.

IT'S **KENNECOTT** TELEPHONE CABLE

INDEPENDENT

CHASE BRASS & COPPER CO., WATERBURY 20, CONN.
Distributor for the Products of the
KENNECOTT WIRE & CABLE DIV.
of The Okonite Company

CHASE WAREHOUSES and OFFICES:

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Baltimore	Cleveland	Houston	Minneapolis	Philadelphia	San Francisco
Boston	Dallas	Indianapolis	Newark	Pittsburgh	Seattle
Charlotte	Denver	Kansas City, Mo.	New York (Maspeth, L. I.)	Providence	Waterbury
Chicago	Detroit	Los Angeles		Rochester	

BI-SEAL

...THE ONLY SELF-FUSING POLYETHYLENE TAPE... IS MADE BY BISHOP

Now...only ONE tape for ALL drop wire splices...replaces time-consuming splicing methods requiring two tapes.

BI-SEAL IS THE ONLY POLYETHYLENE TAPE THAT IS...

- Self-fusing under its own pressure.
- Virtually non-absorbent (as low as .0065%).
- Unexcelled for cold weather applications (as low as -55° C).

BI-SEAL OFFERS...

- Proof...years of operational experience indicate much longer weathering life.
- More protection than the original insulation.
- High dielectrical strength (approx. 1000V/mil). BI-SEAL conforms perfectly to the most complex shape.

For complete information see your telephone supply distributor or Write today for Free Catalog on BI-SEAL and other quality BISHOP tapes.

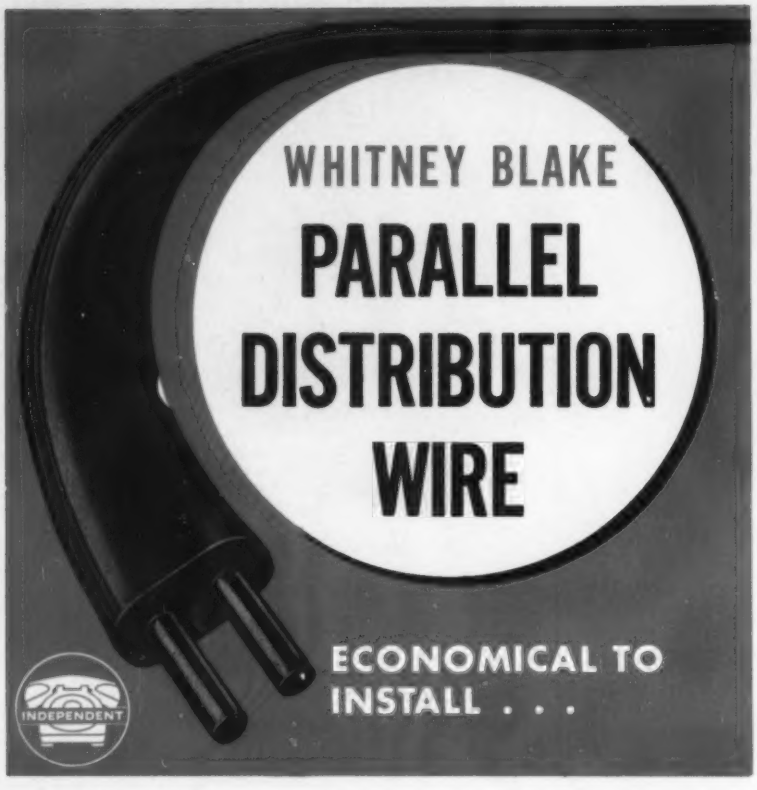
BISHOP
MANUFACTURING CORPORATION
12 Canfield Rd., Cedar Grove, N. J.

BISHOP...MORE THAN A CENTURY OF ELECTRICAL INSULATION

INDEPENDENT

PARALLEL DROP WIRE SPLICE

- Wrap with a single half-lapped layer of Bi-Seal Type 2A
- Tension Tape approx. 3/4 original width. Extend tape 1/2" beyond sleeve
- Completed Splice
- Write for copies of Bi-Seal Splicing Methods, Specification BM-1



A minimum of labor is involved in installing WB Parallel Distribution Wire. It is ideally suited for long span construction. The high molecular weight polyethylene jacket is unaffected by adverse atmospheric conditions and also protects against transmission interference caused by tree branches, kite strings and other foreign objects falling across open wires.

WB Parallel Distribution Wire is made to the same high standards of quality that have maintained Whitney Blake leadership in the Independent Telephone Industry.

WB

4-8

WHITNEY BLAKE COMPANY

WELL BUILT WIRES SINCE 1899

NEW HAVEN 14, CONNECTICUT

pointed engineer for the former Telephone Services Inc., in which position he had staff responsibility for engineering work on the properties of Gary Group companies located in 18 states, and later became a consultant in telephone engineering for these companies.

Following his retirement from the Gary Group on May 1, 1956, Mr. Roach acted as consultant for various Independent telephone companies and later became associated with the Illinois Consolidated Telephone Co. of Mattoon, Ill., retiring from that company in the latter part of 1958.

He is survived by his wife, Clara Lile; a son, James; daughter, Mary Evelyn, and several grandchildren.

•

ALLYE LAWSON, 51, president of the Southern Nevada Telephone Co., died in his office on Apr. 12, presumably of a heart attack.

Mr. Lawson had been president of the company since last December, and prior to that, had served as treasurer and chairman of the board since the death of his father, Sam Lawson, who founded the company.

He was born on Aug. 6, 1907, in Riverside, Cal., and went to Las Vegas with his parents at the age of one year. He attended high school in Las Vegas and graduated from the University of Nevada in 1931 as an electrical engineer.

After college, he worked for a time for the power company as a surveying engineer, and filed maps for the original power line to Boulder Dam in 1935.

Subsequently, he worked with the telephone company, serving as wire chief and in construction planning.

Mr. Lawson was a past president of the Nevada Society of Professional Engineers, and served on the professional engineers advisory group for the University of Nevada.

Survivors are his wife, Virginia, and two children, Sammy Lee and Eugenia.

Ray W. Smith Dies

Ray W. Smith, president and editor of Telephone Engineer Publishing Corp., Chicago, died on Apr. 17 in Evanston (Ill.) Hospital following a serious operation on Apr. 13. The obituary will be published in next week's issue.

Happiness and Friendship

"Our happiness in this world depends on the affections we are enabled to inspire."—DUCHESSE DE PRASLIN.

General Telephone Holds Annual Meeting in Cal.

The annual meeting of the shareowners of General Telephone & Electronics Corp. was held on Apr. 15 in Santa Monica, Cal. The company stated that Santa Monica was selected for this year's meeting because it is the headquarters city of General Telephone Co. of California, the largest operating telephone company of the corporation, and because it gave some 20,000 shareowners in southern California an opportunity to attend and meet the corporation executives.

The shareowners approved a proposal to increase the number of common shares from 25 million to 30 million, and preferred shares from 1,420,792 to 2½ million.

A proposal to reduce the capital of the corporation, from time to time, by an amount equal to the excess of the capital represented by converted 4.36 per cent convertible preferred stock over the capital required to cover the par value of the common stock issued upon such conversion was also approved.

At the organization meeting of the board of directors after the annual meeting, the following officers of the Corporation were elected:

Donald C. Power—chairman of the board & chief executive officer.

Don G. Mitchell—president.

Thomas A. Boyd—executive vice president—administration.

Leslie H. Warner—executive vice president—manufacturing.

Theodore F. Brophy—vice president and general counsel.

Theodore S. Gary—vice president.

George W. Griffin Jr.—vice president.

W. R. Jarmon—vice president—revenue requirements.

F. E. Norris—vice president—planning and development.

George P. Norton—vice president.

R. Parker Sullivan—vice president—marketing & sales.

Jacob B. Taylor—vice president—finance.

W. G. Wright—vice president—operations.

Robert F. Briggs—secretary.

Ralph D. Heusel—treasurer.

Raymond E. Dolar—controller.

H. H. Howlett—assistant secretary.

Sherman C. Wilcox—assistant secretary.

C. T. Downey—assistant secretary.

G. Robert Howard—assistant controller.

During the annual meeting, Mr. Power reviewed highlights of the company's 1958 operations as follows:

The number of system telephones increased 7 per cent to a total of 3½ million.

Dial-operated telephones increased 5

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Two complete tools — heavy-duty Pruner (1¼" capacity) with compound lever action blade PLUS fast-cutting curved blade Pole Saw. Each head section 39" long. Both fit same 1¼" octagon Sitka spruce pole. Intermediate and bottom pole sections furnished in 4', 6' or 8' lengths.

LC-65 Wire Raising Tool (left) of malleable casting with two hooks for simultaneous placing of steel strand and open telephone line. Fits same pole as "WE" Combination. Weight only 1 lb. 3 oz. Very popular.

No. 777 Two-Hand Pruner (right) of hardened drop forged crucible steel. Blade position reversed for easier right-hand operation. Overall length 31½".

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per cent and now account for 88 per cent of all telephones served.

Plant and equipment increased 15 per cent, and now amounts to 1.2 billion dollars.

For the first time in the company's history, revenues exceeded the ½-billion-dollar mark. The precise figure is 552 million dollars—11 per cent ahead of 1957.

The net income figure amounted to 50.8 million dollars—an increase of 11 per cent over 1957.

If the companies are included which are affiliated with General Telephone & Electronics Corp., and in which the company has operating control but not majority ownership—namely British Columbia Telephone Co. and the Philippine Long Distance Telephone Co.—total assets at the end of 1958 were almost 1.6 billion dollars and the total telephones operated were over 4 million.

The net per-share earnings on the average common stock outstanding during the year, were $3.26 as compared to $3.05 in 1957. This is a 7 per cent increase. The 1958 per share net is based on 15,338,000 shares of common outstanding, an increase of 560,000 shares over the previous years.

Mr. Power also stated that new promotional efforts and market research activities during 1958 were instrumental in improving sales and obtaining a more accurate measure of the market potential of the company's products. As a result, 100,000 extension telephones and 2,600 new paystations were placed in service during the year.

He also pointed out that the 185 million dollars invested in plant and equipment for local and long-distance services was only a shade under the company's 1957 record high of 186.4 million dollars.

Mr. Power added, "We anticipate an expenditure of approximately 186 million dollars during the current year. The above-average growth of the areas we serve calls for additional mechanization and plant expansion of considerable magnitude."

Book Review

"THE CHANGING ECONOMIC FUNCTION OF THE CENTRAL CITY," by Dr. Raymond Vernon, director of the New York Metropolitan Region Study. 92 pages. Published by Committee for Economic Development. Prices below.

The rapid economic changes leading to the present deterioration of the nation's great central cities are described and analyzed in this booklet. Telephone company personnel interested in economic and population changes in large cities and their suburban areas might find it worthwhile to obtain a copy.

The absolute decline in population, jobs, values, and economic activities in the older central cities and the failure

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to find new economic functions for the areas between downtown and the suburbs that are coming to be known as "the grey belt" are problems highlighted by the study. At the same time the study calls attention to new or changing economic functions that are best performed within the central city and should not be moved to the suburbs.

"The Changing Economic Function of the Central City" is based in part on the forthcoming findings of the New York Metropolitan Region Study. The paper was prepared for the Area Development Committee of the CED and is the first of several projected papers on the urban-metropolitan problem.

(CED is a non-profit, non-political economic research and education organization supported by voluntary contributions from business concerns. Its purpose is to help determine through objective research those economic policies that will encourage attainment and maintenance of high production and employment within the framework of a free society.)

Although Dr. Vernon's study was confined to the New York area, he stresses that the same problems are to be found in 12 other major cities. He lists these as follows: Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Philadelphia, Pittsburgh, St. Louis and San Francisco.

Dr. Vernon's paper examines the economic costs of these central cities, which stem from congestion, urban de-

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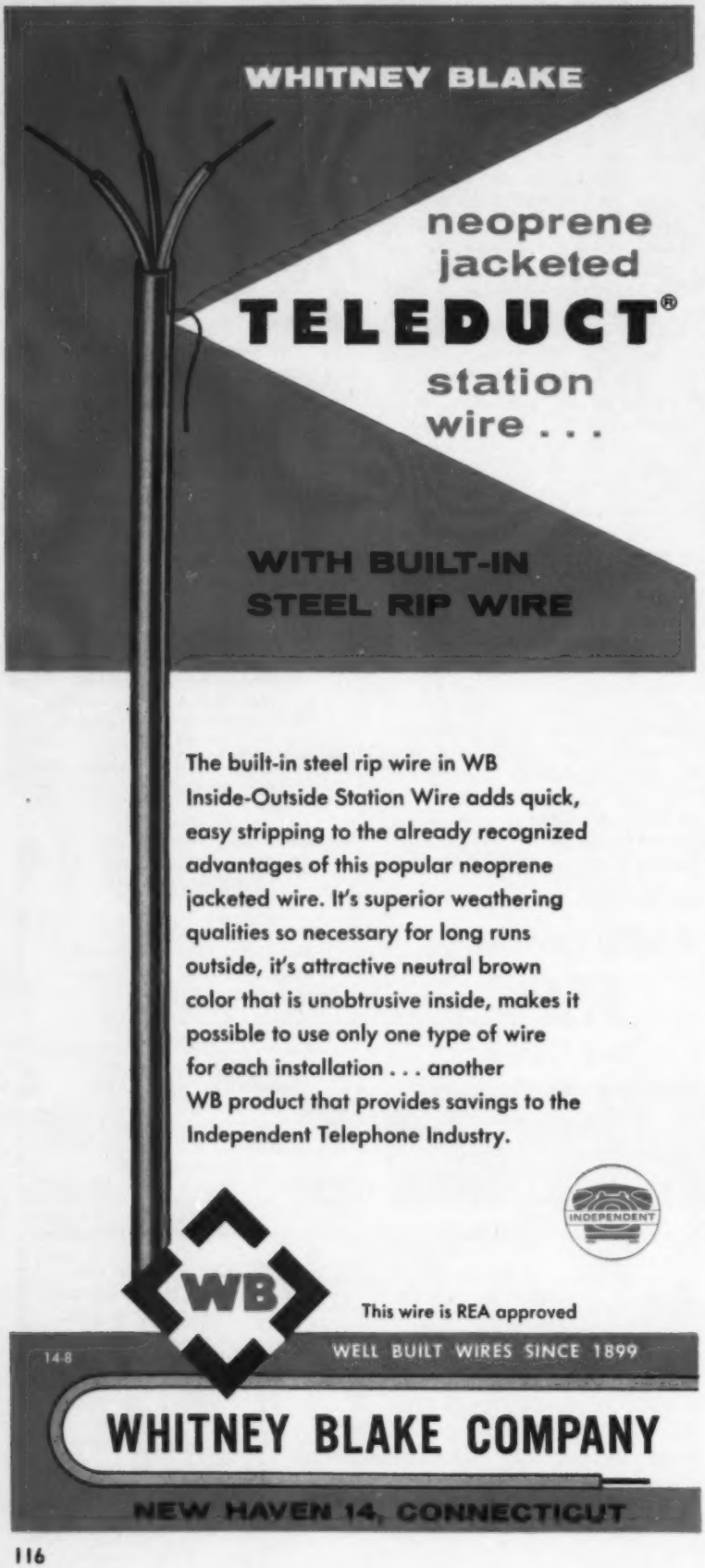
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cay, the "fiscal incapacities" of local governments, and the "insatiable demands" for schools, water and sewage plants, and other public utilities.

He paints a pessimistic picture of the future of the central city as it has existed, but he finds cause for optimism if adjustment to the many economic changes is realistically approached.

The most challenging problem lies in "the growing obsolescence found in most central cities between the business district and surrounding suburbs—an indeterminate area which is becoming known as the 'grey' belt."

Dr. Vernon examines many aspects of the urban-metropolitan problem. He stresses throughout his paper such economic factors as the costs of doing business in the central core and the changing pattern of wage rates. Of the latter he says:

"On the whole . . . one sees little or nothing in the labor-cost picture which makes the central city attractive as a place for doing business, as compared with its suburbs."

However, the central city, he says has "some slight advantage for the collection of certain types of labor force," especially office workers. Dr. Vernon sees the central city losing large manufacturing and becoming more and more like Manhattan—an island of office workers. He sees this in spite of his observation that the range of rentals in existing structures for manufacturing is "scarcely higher than that in the suburbs."

Dr. Vernon's conclusions:

"As one fits these various trends into a coherent whole, they suggest the possibility that we may have entered upon a new phase in the development of the large central cities of the nation. At the very center of such cities—more so in the larger than in the smaller ones—there is every reason to expect continued vitality.

"Office activities in the nation are expanding and will continue to expand. The central cities may not capture quite as high a proportion of such activity as they have in the past, but there is not much doubt that absolute increases in such employment will occur. Nor is there much doubt that, to the extent that they occur, they will offer a continued stimulus to some central business districts.

"This activity aside, one sees only a growing obsolescence in the rest of the central city beyond its central business district. There is nothing in view calculated to interrupt the cycle so far evident in the old cities. When middle-income structures reach an advanced stage of obsolescence, they will be converted to intensive low-income use.

"The ancient slums will be partially abandoned, as they have been in the past, for the newer ones; populations will thin out in the former and rise in the latter, in a wave which moves out-

ward to the edges of the city and into the older portions of the suburban towns.

"The outward movement of people will be matched by an outward movement of jobs. Retail trade will follow the populations. Manufacturing and wholesaling establishments will continue to respond to obsolescence by looking for new quarters and by renting in structures in the suburban industrial areas where obsolescence is less advanced. The movement of jobs will reinforce the movement of residences.

"Beyond the central business district, therefore, but within the confines of the central city, there is likely to be a long-run decline in the intensive use of space as sites for jobs and homes. Will such space be converted to other uses?

"It is difficult to detect any actual or incipient private demand for city space which is of a magnitude to replace such prior uses. Modern factory space is ruled out by the high costs of recapturing the site; new multi-story lofts face a poor market, since they will be competing with obsolescent factories vacated by their prior owners; office space, however greatly it expands, can scarcely be expected to fill more than a minuscule area, largely concentrated toward the city center; high-income renters may fill a little more space, but not much.

"This leaves two possibilities: that middle-income families may decide to return to the cities in great numbers; or that subsidized governmental intervention, such as low-income housing or open-space projects, may be expanded to such levels as to constitute a significant space-using force.

"The first possibility would fly in the face of deep-seated historical trends, based on powerful sociological forces. The latter demands a scale of intervention much larger than any which heretofore has been contemplated."

Copies of this booklet are available from the Committee for Economic Development, 711 Fifth Ave., New York 22, N. Y., at the following prices: one to nine copies, $1.00 each; 10 to 24, $.90 each; 25 to 49, $.85; 50 to 99, $.80; 100-249, $.70; 250-499, $.60, and 500 to 1,000, 50 cents each.

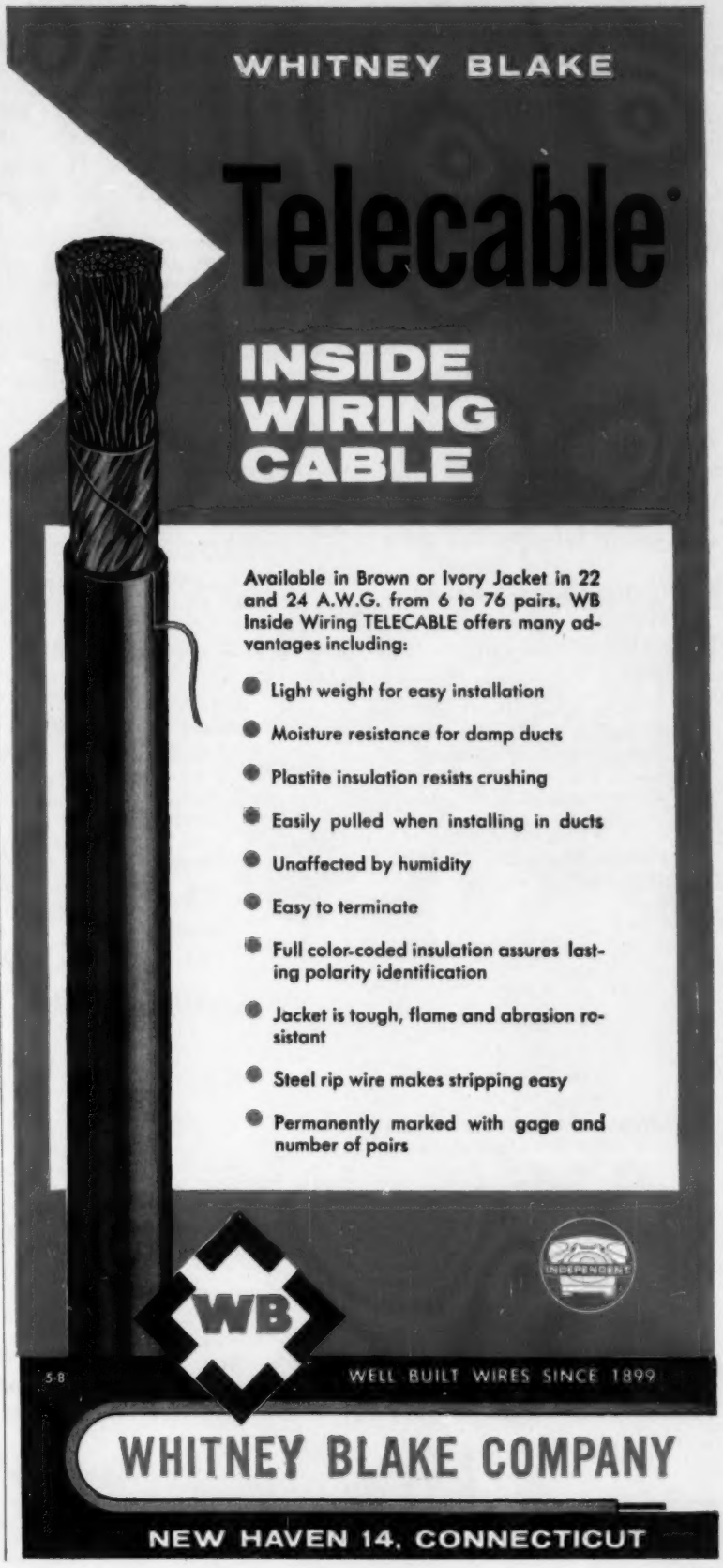
Automatic Electric Names D.C. Area Representative

John P. Costello has recently been named a sales representative for a new territory in the industrial products division of Automatic Electric Sales Corp.

His territory will cover the Washington, D. C. area, including the District of Columbia, Virginia, parts of West Virginia, and Maryland. His headquarters are in Alexandria, Va.

Formerly staff assistant in the corporation's government sales division, Mr. Costello joined Automatic Electric Sales in 1955 as a sales correspondent.

He attended Loras College in Dubuque, Ia.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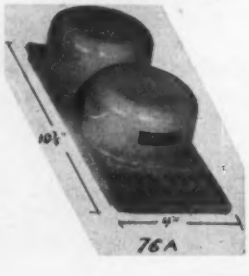

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W.E. 77A (subsitute) C-161 . $ 3.50
76A (two coils) 1:1 rat. 5.00
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93A, B, F, G 12.50
70A ring-thru 5.00
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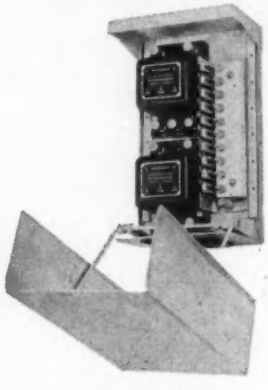

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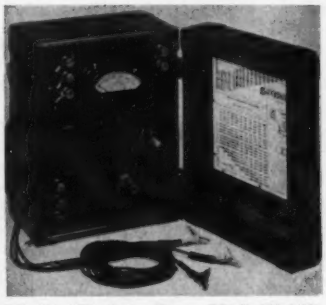

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.102, #10 or .104, C Groove	Per 100	4.00

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